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Cascade-Siskiyou National Monument

Proposed Resource Management Plan/ Final Environmental Impact Statement

BLM
Medford District Office

February 2005

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BUREAU OF LAND MANAGEMENT

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BUREAU OF LAND MANAGEMENT

Cascade-Siskiyou National Monument Proposed Resource Management Plan and Final Environmental Impact Statement

Prepared by

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Medford District
August 2004

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IN REPLY REFER TO:
1610, 6100(OR114)

February 2005

Dear Interested Party:

In accordance with the Federal Land Policy and Management Act and the National Environmental Policy Act (NEPA), the Bureau of Land Management (BLM) Medford District Office has prepared for your review the attached Cascade-Siskiyou National Monument (CSNM) Proposed Resource Management Plan and Final Environmental Impact Statement (Proposed RMP/FEIS). This document integrates all resource management activities in the planning area into a single, unified land use plan that will replace the Medford District Resource Management Plan as the planning document for this area. The proposed land use plan/FEIS details and analyzes the management activities proposed for this area. Within the next six months, the resource management plan will be finalized through the Record of Decision (ROD).

A 90-day comment period followed the publication of the draft plan in June 2002. In response to numerous requests, the public comment period was extended for an additional 90 days, closing on December 19, 2002. Approximately 17,000 comments were received. Substantive comments pertinent to this land use planning process were summarized and are found, along with BLM responses in Chapter 5 of the attached document. Significant changes since the draft document are summarized in Chapter 1.

Additional hard copies, as well as electronic versions, of the Proposed RMP/FEIS may be obtained at the address above. The document is also available on the internet at: www.or.blm.gov/Medford/CSNM.

The Proposed RMP incorporates both proposed **land use planning decisions** and more specific proposed project level or **implementation decisions.**

Land use planning decisions are those which consist of desired outcomes (goals, standards and objectives) and the allowable uses (including allocations, levels of use, and restrictions on use) and management actions necessary to achieve those outcomes. Land use plan decisions provide management direction and guide future actions. When land use plan decisions are proposed, the public has an opportunity to protest them to the BLM Director prior to their approval. The Office of Hearings and Appeals (OHA) does not have jurisdiction to review land use plan decisions.

In this document protestable proposed land use plan decisions are presented in the following resource categories:

- Land tenure zoning classifications;
- Designations of vegetation management areas;
- Visual resource management classifications;
- Programmatic and site-specific decisions related to livestock grazing;
- Decisions regarding transportation and access (except those mandated by the presidential proclamation);
- Wildland fire management; and
- Management of linear rights-of-way and communication sites

You now have the opportunity to protest the proposed **land use planning decisions** contained in the Proposed RMP/FEIS. The BLM Planning Regulations, 43 CFR 1610.5-2, state that any person who participated in the planning process and has an interest which may be adversely affected may protest the proposed land use planning decision(s). A protest may raise only those issues that were submitted for the record during the planning process. Protests must be filed within 30 days of the date the Environmental Protection Agency publishes its Notice of Availability of the FEIS in the *Federal Register*. The specific protest period closure date will be announced through one or more of the following: local news media, postcards or newsletters, or the Medford District website at the internet address above. To be considered timely, your protest must be postmarked no later than the last day of the protest period. Though not a requirement, we suggest you send your protest by certified mail, return receipt requested. Written protests must be submitted to the following address:

Director
Bureau of Land Management
Attention: Ms. Brenda Hudgens-Williams, Protests Coordinator
WO-210/LS-1075
Department of the Interior
Washington DC, 20240

To expedite delivery in the Washington DC area, you may wish to send your protest via one of the express air delivery services to:

Director
Bureau of Land Management
Attention: Ms. Brenda Hudgens-Williams, Protests Coordinator
WO-210
1620 L Street NW, Suite 1075
Washington DC, 20036

You may also wish to send a copy (in addition to the signed original sent via regular mail or express delivery) of the protest by FAX or e-mail to Ms. Brenda Hudgens-Williams at:

FAX: 202-452-5112 or email: bhudgens@wo.blm.gov

You are also encouraged (but not required) to forward a copy of your protest to the Medford District Manager at the address listed in the Medford District letterhead. To be considered complete, your protest must contain the following information at a minimum:

- Name, mailing address, telephone number and the affected interest of the person filing the protest.
- A statement of the issue(s) being protested.
- A statement of the parts(s) of the proposed plan being protested. To the extent possible, reference specific pages, paragraphs, and numbered sections of the document.
- A copy of all your documents addressing the issue or issues which were previously discussed with the BLM.
- A concise statement explaining why the proposed decision is believed to be incorrect. This is a critical part of your protest. Document all relevant facts, as much as possible. A protest that merely expresses disagreement with the state director's proposed decision, without providing any supporting data, will not be considered a valid protest.

Implementation decisions generally constitute BLM's final approval allowing on-the-ground actions to proceed. These types of decisions require site-specific planning and NEPA analysis. Unlike land use plan decisions, implementation decisions are not subject to protest under the planning regulations. Instead, implementation decisions are subject to various administrative remedies, primarily appeals to the OHA. Land use planning decisions can be distinguished from implementation decisions in that, although the former are themselves final and effective upon adoption, they normally require additional decision steps (such as permit approvals) before activities having on-the-ground impacts can be carried out.

Proposed **implementation level decisions** contained in this document are **not** protestable under the BLM planning regulations. Rather, a separate appeal process for specific proposed actions will be offered at the time the Approved RMP and ROD is made available to the public during 2005. Examples of implementation level decisions include:

- Specific vegetation and weed treatment projects and pilot studies;
- Specific fire hazard reduction projects in the wildland-urban interface;
- Specific visitor facility development (e.g., trailheads, restrooms, etc.);
- Framework for making future livestock management decisions;
- Specific methods for decommissioning roads.

Concurrent with the protest period for the Proposed RMP/FEIS is a 30-day public comment period. Comments may be addressed to Richard J. Drehobl, Monument Manager, at the address in the Medford District Office letterhead, or by email at kathy_minor@or.blm.gov. In order to be considered, comments must be postmarked by the comment closing date which will coincide with the closing date for the protest period.

We appreciate your help in this planning effort and look forward to your continued interest and participation as the plans are implemented. For additional information or clarification regarding this document or the planning protest process, please contact Kathy Minor (see above for contact information).

Comments and protests on the Proposed RMP/FEIS, and comments on the proposed Cascade-Siskiyou National Monument Management Plan, including names and street addresses, will be available for public review at the Medford District Office during regular business hours 7:30 a.m. to 4:30 p.m., Monday through Friday, except holidays. Individual respondents may request confidentiality. If you wish to withhold your name or street address from public review or from disclosure under the Freedom of Information Act, you must state this prominently at the beginning of your written comment/protest. Such requests will be honored to the extent allowed by law. All submissions from organizations and businesses, and from individuals identifying themselves as representatives, or officials of organizations or businesses, will be available for public inspection in their entirety.

Sincerely,

Richard J. Drehobl
Field Manager/Monument Manager
Ashland Resource Area

1 Attachment

1 - Cascade-Siskiyou National Monument (CSNM) Proposed Resource Management Plan and Final Environmental Impact Statement (Proposed PRMP/FEIS).

Cascade-Siskiyou National Monument
Proposed Resource Management Plan/Final Environmental Impact Statement

1. Responsible Agency: United States Department of the Interior, Bureau of Land Management

2. Draft ( ) Final (X)

3. Administrative Action (X) Legislative Action ( )

4. Abstract: The Cascade-Siskiyou National Monument (CSNM) was established on June 9, 2000 when President William J. Clinton issued a presidential proclamation under the provisions of the Antiquities Act of 1906. The planning area encompasses 52,947 acres of federal land in southwestern Oregon. Proposed management activities would protect or promote habitat for the following federally listed threatened or endangered species: northern spotted owl, bald eagle, and Gentner's fritillary. Forest thinning and prescribed burning would be used for restoration purposes and to reduce fuel hazard in the wildland-urban interface.

Major PRMP issues include management of the following: (1) forest and non-forest vegetation; (2) transportation system in the CSNM; (3) riparian and wetland areas; (4) recreation; and (5) livestock grazing. The proposed plan defers most decisions regarding livestock grazing allotments; however, it does provide a framework for making future decisions regarding livestock operations.

Final decisions will supercede the Medford District Resource Management Plan completed in 1995 for lands within the CSNM area and provide direction for management of these public lands for approximately 10 years.

5. Date comments must be received: The close of the 30-day comment/protest period will be announced in news releases, legal notices, individual mailings, and on the monument web page at: www.or.blm.gov/Medford/CSNM.

6. For further information contact:

Kathy Minor
Bureau of Land Management
Medford District Office
3040 Biddle Road
Medford, Oregon 97504
Telephone: (541) 618-2200
Email: kathy_minor@blm.gov

Abbreviations and Acronyms

BLM	Bureau of Land Management
BPM	Best Management Practice
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CSEEA	Cascade Siskiyou Ecological Emphasis Area
CSNM	Cascade-Siskiyou National Monument
CWA	Clean Water Act
CWD	Coarse Woody Debris
DEA	Diversity Emphasis Area
DEIS	Draft Environmental Impact Statement
DOI	Department of Interior
DRMP	Draft Resource Management Plan
EA	Environmental Assessment
EIS	Environmental Impact Statement
ESA	Endangered Species Act
FLPMA	Federal Land Policy and Management Act
FEIS	Final Environmental Impact Statement
GIS	Geographic Information System
HLRC	Hyatt Lake Recreation Complex
IMP	Interim Management Policy
LSR	Late Successional Reserve
NEPA	National Environmental Protection Act
NHPA	National Historic Preservation Act
NPS	National Park Service
NRCS	Natural Resource Conservation Service
NWFP	Northwest Forest Plan
O&C	Oregon and California Railroad Company Revested Lands
ODEQ	Oregon Department of Environmental Quality
ODFW	Oregon Department of Fish and Wildlife
OGEA	Old-Growth Emphasis Area
OHV	Off-Highway Vehicle
ONHP	Oregon Natural Heritage Program
OWRD	Oregon Water Resources Department
PCNST	Pacific Crest National Scenic Trail
PRMP	Proposed Resource Management Plan
RNA	Research Natural Area
ROD	Record of Decision
TMDLs	Total Maximum Daily Loads
USDA	United States Department of Agriculture
USDI	United States Department of the Interior
USFS	United States Forest Service
USFWS	United States Fish and Wildlife Service
USGS	United States Geologic Service
WQMP	Water Quality Management Plan
WSA	Wilderness Study Area

USER'S GUIDE

The Cascade-Siskiyou National Monument (CSNM) Proposed Management Plan and Final Environmental Impact Statement (proposed plan) is divided into five chapters, and includes maps, appendices, a glossary, references, and an index. This document is published in a condensed format and can be used in conjunction with the Draft Management Plan/Draft Environmental Impact Statement (draft plan) distributed in June 2000.

The **Preface** contains the title page, cover letter with protest procedures, and the proposed plan abstract.

Chapter 1 (Purpose and Need) contains introductory material for the proposed plan. It describes the purpose and need for the preparation of the document and identifies the issues that will be addressed. It also describes the planning and scoping process and outlines the planning criteria. This chapter also outlines changes that have occurred since the publication of the draft plan. A table comparing the proposed plan actions with the four draft alternatives can be found at the end of this chapter.

Chapter 2 (Proposed Management Plan) outlines the general management direction for the monument including resource objectives and actions to accomplish those objectives. This chapter is organized as follows: Introduction, Old-Growth Emphasis Area; Diversity Emphasis Area; Riparian Areas and Aquatic Resources; Livestock Grazing, Transportation and Access; Recreation and Visitor Services; and General Management. Maps and tables are found throughout the chapter.

Chapter 3 (Environmental Consequences) analyzes the potential impacts of implementation of the proposed plan. The analysis covers the direct, indirect, and cumulative effects of the proposed actions on monument resources. This chapter also identifies and discusses issues considered but not analyzed in detail.

Chapter 4 (Consultation and Coordination) includes a summary of public involvement, a collaborative management strategy, and a list of agencies and organizations receiving the document. This chapter also addresses the consistency of the Proposed Plan with other approved plans.

Chapter 5 (Public Comments) addresses the public comments received on the draft plan and includes responses to those comments.

The **Appendices** contain additional information to help in the understanding of the document.

The **Glossary, References, and the Index** provide an aid to the reader in finding and understanding the material contained in this document.

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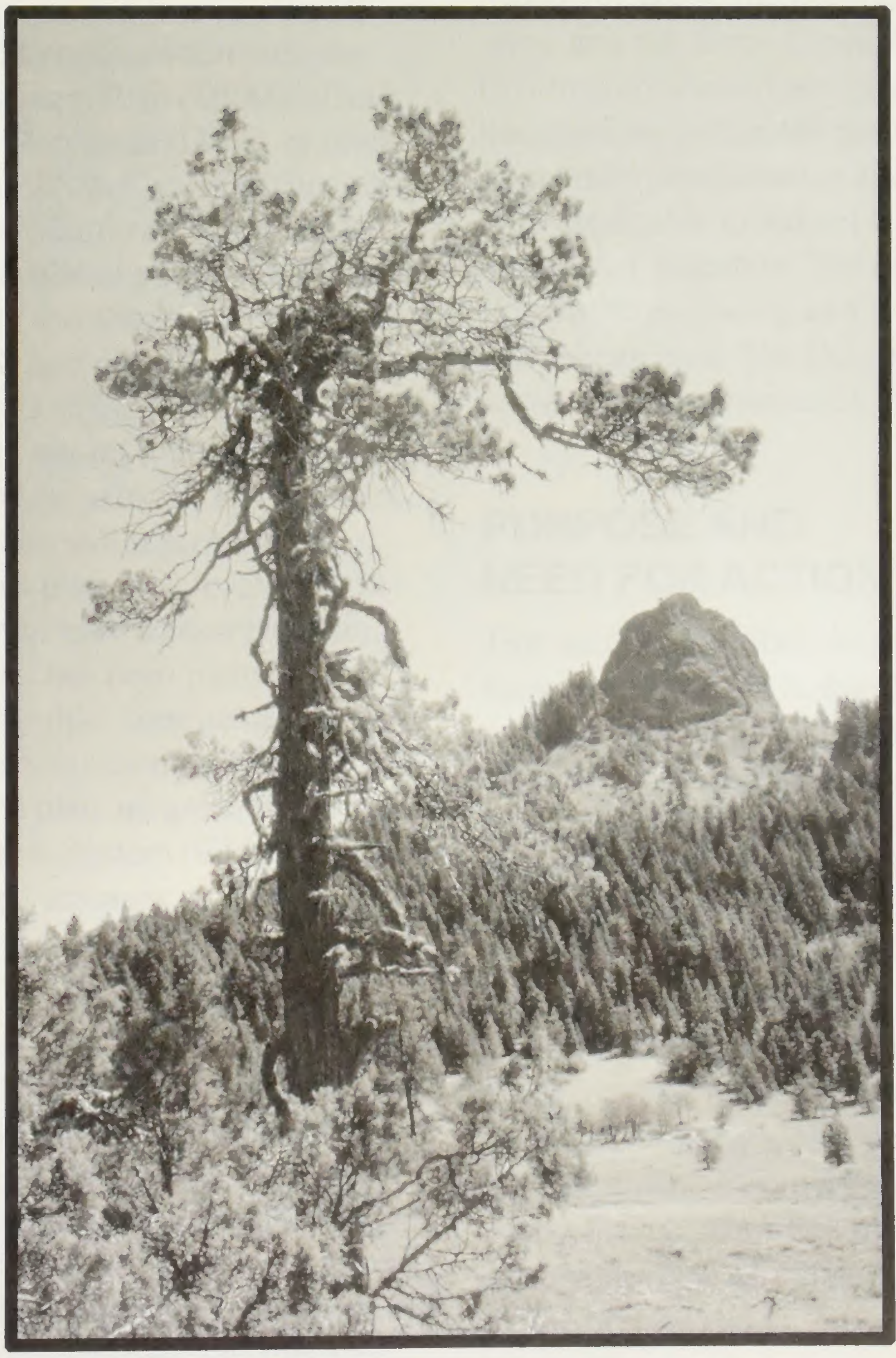
Chapter 1
Purpose and Need



CHAPTER 1
Purpose and Need

INTRODUCTION

The Cascade-Siskiyou National Monument (CSNM) was established on June 9, 2000 when President William J. Clinton issued a presidential proclamation (Appendix A) under the provisions of the Antiquities Act of 1906 (Appendix B). This Proposed Resource Management Plan and Final Environmental Impact Statement (PRMP/FEIS) (also referred to as the plan or proposed plan) details a management strategy designed to protect and enhance the public lands and associated resources described in the proclamation.

This proposed plan is presented in a condensed format and can be used in conjunction with the Draft Resource Management Plan (DRMP)/Draft Environmental Impact Statement (DEIS, or draft plan), published in June 2002. Copies of the draft plan are available at the Medford District BLM. The draft plan is also available at www.or.blm.gov/csnm The description of the affected environment (Chapter 2 in the DEIS) and detailed descriptions of alternatives (Chapter 3 in the DEIS), as well as some appendices, are not reproduced in this plan. The description of the affected environment presented in the draft plan still represents the baseline from which this plan was developed. In some cases, supplemental information regarding the affected environment has been included in this plan in response to public comments and the need for additional baseline information. Acreages reported throughout this plan are generated using a Geographic Information System (GIS) and may differ slightly from legal acreages.

SETTING

The monument covers 52,947 acres of federal land in southwestern Oregon (Map 1). Additionally, there are approximately 32,000 acres of privately owned land within the greater monument boundary. Prior to monument designation, there were several existing designations that recognized and protected the special ecological characteristics of this area. These designations included:

- Soda Mountain Wilderness Study Area (WSA);
- Jenny Creek Late-Successional Reserve and Tier 1 Key Watershed;
- Pilot Rock and Jenny Creek Areas of Critical Environmental Concern;
- Mariposa Lily Botanical Area;
- Scotch Creek and Oregon Gulch Research Natural Areas (RNAs); and
- Cascade-Siskiyou Ecological Emphasis Area (CSEEA).

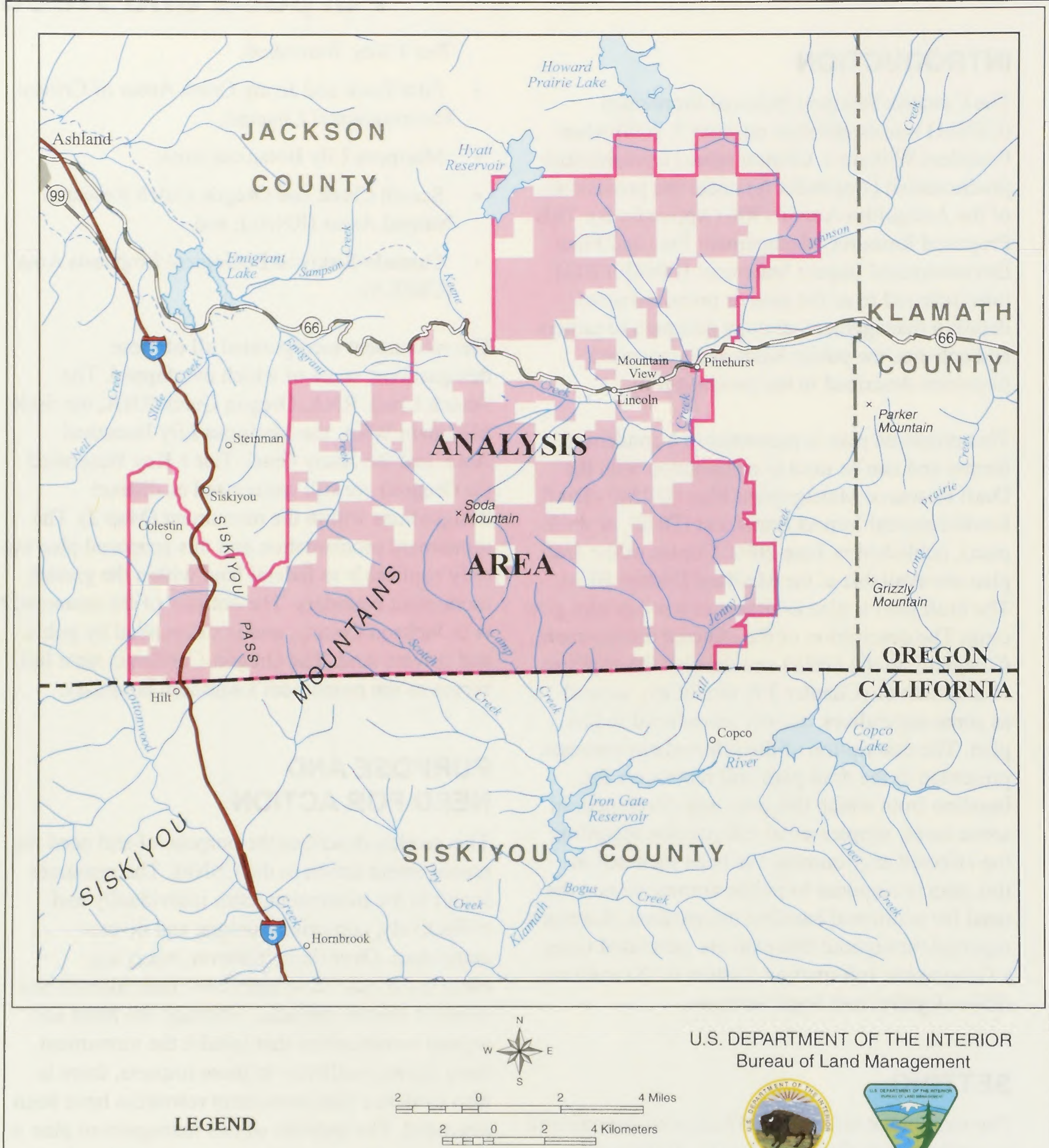
The monument incorporated all of these designations, some of which overlapped. The Scotch Creek RNA, Oregon Gulch RNA, the Soda Mountain WSA, the Mariposa Lily Botanical Area, and the Jenny Creek Tier 1 Key Watershed (in Oregon) are still recognized as distinct designations within the monument (Map 2). The monument proclamation and this proposed plan are only applicable to federal land within the greater monument boundary. The entirety of the monument is in Jackson County, and is surrounded by public and private land. The Oregon-California state line serves as the monument's southern boundary.

PURPOSE AND NEED FOR ACTION

This section describes the purpose of and need for management action in the CSNM. The resources found in the monument, both individually and collectively, comprise a unique and diverse ecosystem. Over time, however, many key elements of this ecosystem have been altered as a result of human impacts. Although the plant and animal communities that inhabit the monument have shown resilience to these impacts, there is also evidence that monument resources have been degraded. The purpose of this management plan is to identify management concerns associated with the monument, and to determine the best course of action for the protection, maintenance, restoration, or enhancement of monument resources as required by the proclamation.

The ecological and biological importance of the area now known as the CSNM has long been acknowledged (Detling 1961; Nelson 1997;

Map 1: Cascade-Siskiyou National Monument Vicinity Map



LEGEND

▭ Greater Cascade-Siskiyou National Monument Boundary

🟪 Federal Land

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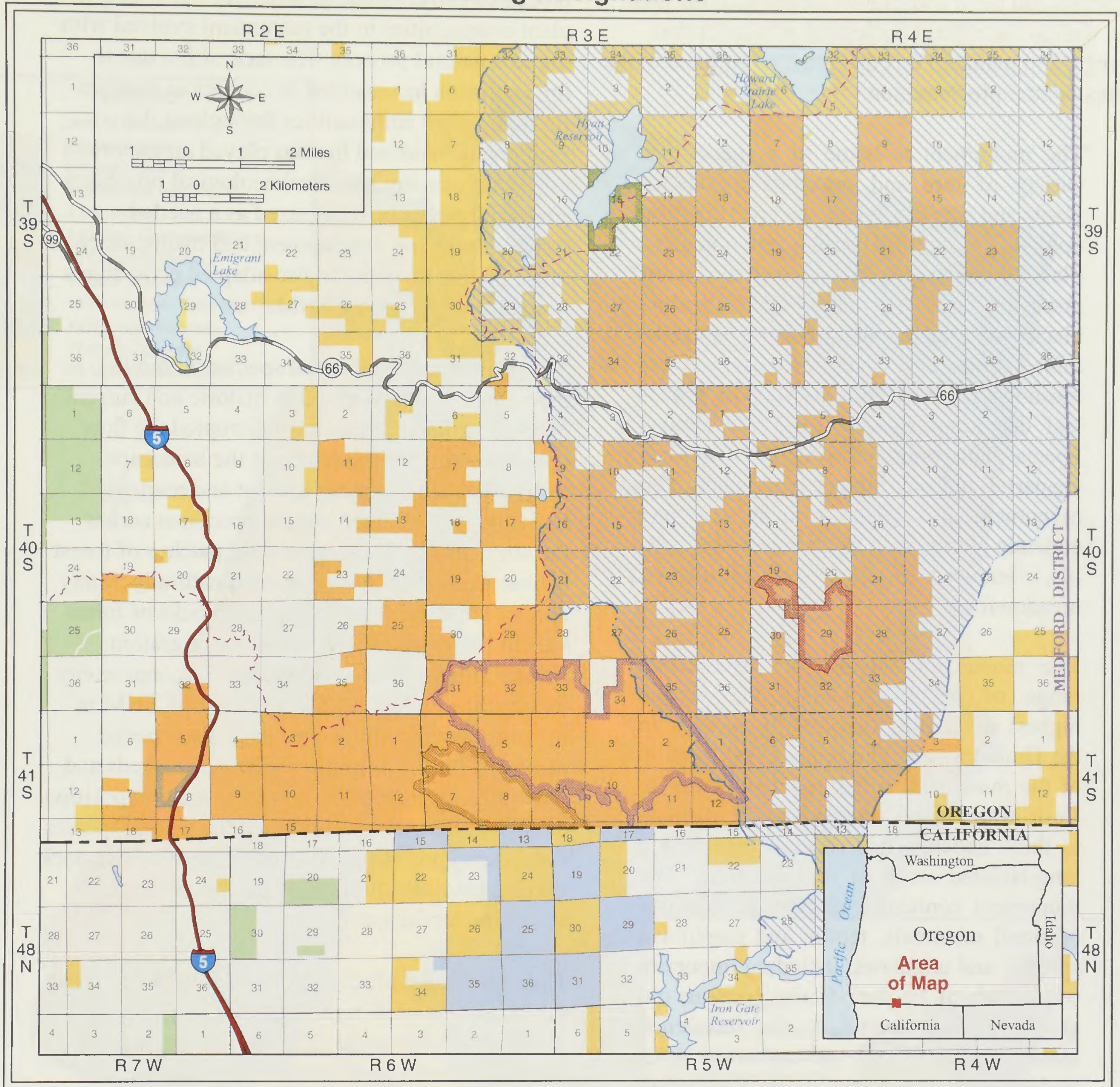
Map 2: Cascade-Siskiyou National Monument Existing Designations



LEGEND

- ▭ Hyatt Lake Recreation Area
- ▭ Mariposa Botanical Area
- ▭ Oregon Gulch RNA
- ▭ Scotch Creek RNA
- ▭ Soda Mountain WSA
- ▨ Jenny Creek Tier 1 Key Watershed
- - - - Pacific Crest Trail
- — BLM District Boundary

BLM Administered Land

- 🟧 Cascade-Siskiyou National Monument
- 🟨 Other

Other Administered Land

- 🟩 Forest Service
- 🟨 Bureau of Reclamation
- 🟦 State
- ⬜ Private or Other

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Prevost et al. 1990). The establishment of the CSNM recognized the high number of native species and plant community richness of the area, as well as the natural ecological processes that create and maintain this diversity, as outlined in the presidential proclamation:

> "The monument is home to a spectacular variety of rare and beautiful species of plants and animals, whose survival depends upon its continued ecological integrity. Plant communities present a rich mosaic of grass and shrublands, Garry and California black oak woodlands, juniper scablands, mixed conifer and white fir forests, and wet meadows. Stream bottoms support broad-leaf deciduous riparian trees and shrubs. Special plant communities include rosaceous chaparral and oak-juniper woodlands. The monument also contains many rare and endemic plants, such as Greene's Mariposa lily, Gentner's fritillary, and Bellinger's meadowfoam.
>
> The monument supports an exceptional range of fauna, including one of the highest diversities of butterfly species in the United States. The Jenny Creek portion of the monument is a significant center of fresh water snail diversity, and is home to three endemic fish species, including a long-isolated stock of redband trout. The monument contains important populations of small mammals, reptile and amphibian species, and ungulates, including important winter habitat for deer. It also contains old growth habitat crucial to the threatened Northern spotted owl and numerous other bird species such as the western bluebird, the western meadowlark, the pileated woodpecker, the flammulated owl, and the pygmy nuthatch."

Much of this plant community richness is due to the monument's geographical location at the meeting of the Cascade, Klamath and Eastern Cascade Slopes Ecoregions (Map 3) (Pater et al. 1997a). Evolution, long-term climatic change, and natural geological processes (volcanism, mass wasting, erosion, etc.) operating across geological time continue to contribute to the high ecological richness of the area.

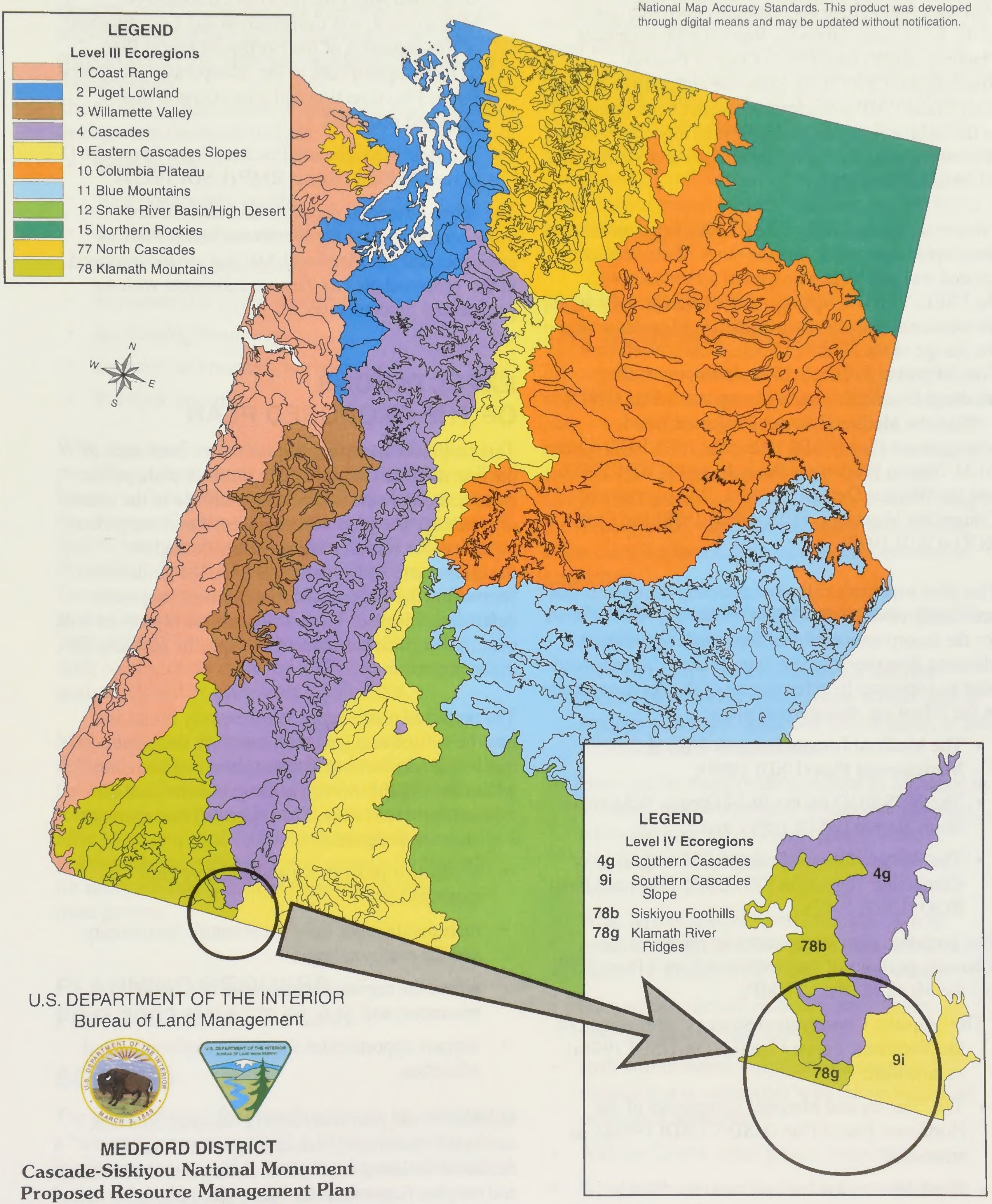
The monument's continued diversity depends upon the degree to which landscape-level ecological processes can continue to function. For example, plant communities in the monument evolved with fire as a natural process. The lack of fire due to fire exclusion has resulted in ecological changes for many plant communities throughout the monument. Wildland fire has played an important role in influencing historical ecological processes and continues to be recognized as a needed component in the development and maintenance of vegetative diversity in fire-adapted ecosystems found throughout the CSNM.

The resilience of individual species within the monument has been tested as historic and current man-made disturbances have disrupted the flow of species and processes across the landscape. Activities such as timber harvest and road-building have changed natural processes across the landscape by creating smaller patches of forest habitat than would have occurred naturally. Many species are dependent upon large blocks of forest habitat for dispersal and long-term migration. Habitat fragmentation and the loss of connectivity threaten the biological integrity of the CSNM in the short term. Disturbances have also created pathways for the migration of noxious weeds and non-native plant species, changing the composition of native plant communities and the animal species dependent upon them. Historic patterns of livestock grazing have also influenced natural processes across the landscape.

The presidential proclamation reserved the CSNM in recognition of its remarkable ecology and to protect a diverse range of biological, geological, aquatic, archeological, and historic objects (also referred to as "monument resources" throughout this document). The proclamation provides the principal management direction for the CSNM and clearly dictates that the Bureau of Land Management (BLM) manage the monument "for the purpose of protecting the objects identified." In addition to the presidential proclamation, provisions of the Federal Land Policy and Management Act (FLPMA) of 1976, as amended, and the National Environmental Policy Act (NEPA) provide the primary direction for the preparation of this resource management plan.

Map 3: Ecoregions of Oregon and Washington

No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual or aggregate use with other data. Original data were compiled from various sources. This information may not meet National Map Accuracy Standards. This product was developed through digital means and may be updated without notification.



U.S. DEPARTMENT OF THE INTERIOR
Bureau of Land Management

MEDFORD DISTRICT
Cascade-Siskiyou National Monument
Proposed Resource Management Plan
Final Environmental Impact Statement
2005

M03-11-02:MD

HOW THIS PLAN IS AFFECTED BY OTHER PLANNING DOCUMENTS

The CSNM was established as a new planning area independent of other BLM-administered lands. This plan, as a stand-alone document, meets requirements of the BLM's regulation for Resource Management Planning (RMP) found in 43 Code of Federal Regulations (CFR) 1610. Since the authority to approve RMPs (and RMP amendments) cannot be re-delegated to the field or district manager levels, this plan will be reviewed and approved by the Oregon and Washington BLM State Director.

Prior to the designation of the CSNM, lands within this geographic area fell within the range of the northern spotted owl and were managed in accordance with the FSEIS/ROD on Management of Habitat for Late-Successional and Old-Growth Related Species within the Range of the Northern Spotted Owl (Northwest Forest Plan) of February 1994, as amended; the Medford District Resource Management Plan (USDI 1995a); the Medford District Integrated Weed Management Plan (USDI 1998); the FEIS/ROD for the BLM Oregon Wilderness Study Report (USDI 1991); and the Western Oregon Program - Management of Competing Vegetation FEIS (USDI 1989) and Final ROD (USDI 1992).

This plan supercedes all other planning documents that previously covered the CSNM. However, NEPA allows for the incorporation of decisions made in previous planning documents where appropriate. This proposed plan incorporates by reference all of the decisions made in the following management plans:

- The Medford District Integrated Weed Management Plan (USDI 1998);
- The FEIS/ROD for the BLM Oregon Wilderness Study Report (USDI 1991); and
- The Western Oregon Program - Management of Competing Vegetation EIS (USDI 1989) and Final ROD (USDI 1992).

This proposed plan incorporates by reference the following portions of the Northwest Forest Plan (NFP) and the Medford District RMP:

- The "Aquatic Conservation Strategy" component of the Northwest Forest Plan (USDA/USDI 1994a), as amended;
- The "Survey and Manage" component of the Northwest Forest Plan (USDA/USDI 1994a), as amended;
- The following land allocations identified in Attachment A of the Northwest Forest Plan ROD applicable to the geographic area now identified as the CSNM: Tier 1 Key Watershed (Jenny Creek) and Administratively Withdrawn Areas (Scotch Creek and Oregon Gulch Research Natural Areas);
- Section E-Implementation (Monitoring, Adaptive Management, Interagency Coordination, Watershed Analysis, Information Resource Management, and Consultation and Coordination) of Attachment A of the Northwest Forest Plan ROD, as appropriate to the incorporated Northwest Forest Plan direction and allocations in this proposed plan; and
- The Best Management Practices from Appendix D of the Medford District RMP (USDI 1995a).

The above described decisions and analysis are those components of the Northwest Forest Plan, as amended, and the Medford RMP that are incorporated in this proposed plan as they are consistent with the presidential proclamation.

EXPECTATIONS OF THE PROPOSED PLAN

This proposed management plan draws from each of the four alternatives outlined in the draft plan, public comments, and new information gathered in the course of planning. The proposed plan identifies management objectives for resource management throughout the monument, which in turn provide the guidance for making the site-specific management proposals detailed in this plan. These management objectives will continue to guide subsequent site-specific planning for the monument.

The proposed plan's scope is necessarily broad and may be viewed as a general framework document that will guide the overall management of activities within the CSNM, as well as the protection and use of monument resources. The suggested management activities are designed to:

- implement progressive and adaptive land management;
- incorporate input from the scientific community and the public at large;
- reflect the regional significance of CSNM resources; and
- support opportunities for public exploration and education.

In addition, the plan will identify resource concerns across the monument landscape, provide a set of decisions outlining appropriate management activities, and create a framework for future planning and decision making. This plan will amend any decisions, prescriptions, or land use allocations in the Medford RMP.

As is the case with any resource management plan, subsequent site-specific planning and analysis will focus on specific resource management issues and implementation of management activities as described in this plan. Some activities such as road maintenance, closures, decommissioning, or improvements may be implemented without further planning, as the detail and analysis within this plan may be adequate to undertake such activities.

The most significant areas in which this plan proposes management decisions include:

- forest health;
- plant community health;
- the wildland/urban interface;
- access and transportation;
- recreation and visitor services;
- facilities/rights-of-way;
- scientific and research activities; and
- livestock grazing.

With regard to livestock grazing in particular, the presidential proclamation directed the Secretary of the Interior to "study the impacts of livestock grazing on the objects of biological interests in the monument with specific attention to sustaining the natural ecosystem dynamics." The BLM published a *Draft Study of Livestock Impacts on the Objects of Biological Interest in the Cascade-Siskiyou National Monument* in April 2001 (USDI). Most of the studies described in the draft document are currently underway and most data analysis should be completed during 2006.

Major decisions regarding livestock grazing have been deferred until more information and analysis regarding the effects of current grazing practices on monument resources is available. However, this current plan does offer some proposed decisions that impact existing grazing management and which create a framework for making future decisions regarding grazing management.

PLANNING PROCESS FOR 2002 DRAFT PLAN

SCOPING

The BLM initiated the planning process by undertaking a "scoping" process in which a large cross-section of the public was invited to identify relevant, substantive issues to be addressed in the draft management plan for the CSNM. The formal scoping period began with publication of the Notice of Intent to produce a management plan in the Federal Register on July 31, 2000 (Volume 65, No.147, Pg. 46731). Written comments were accepted through August 31, 2000. Initially, a letter announcing the establishment of the monument and detailing the planning process was sent to landowners adjacent to the monument, as well as to other interested parties. In addition, the CSNM web page provided up-to-date information on the monument and solicited public input. All relevant information received during the comment period for the Cascade Siskiyou Ecological Emphasis Area (the area's previous designation), Draft Resource Management Plan, and Draft Environmental Impact Statement, was included in the scoping process.

ISSUES IDENTIFIED IN THE SCOPING PROCESS

The scoping process helped to identify a variety of important issues that are addressed in this management plan. Issue identification helps to determine potential management alternatives and areas the environmental analysis must address. Based on the subsequent analysis and evaluation of comments received during the scoping phase, the BLM identified the following major planning issues. They have been formatted as questions:

- What are appropriate strategies for managing old-growth habitat in the CSNM?
- How can native plant communities and rare species be protected from existing threats such as noxious weeds and continued fire exclusion in fire-dependent plant communities?
- How can the transportation system be managed in a manner that best protects monument resources, while allowing for different types of access (e.g., authorized, legal, recreational, and fire suppression)?
- What type of special forest products, such as mushrooms, grasses, Christmas trees and firewood, should be available for public use and collection?
- How will fire hazard reduction activities be managed near private homes?
- How will livestock grazing be managed in a manner that is compatible with the protection of monument resources?
- Will the CSNM affect private property?
- What are the criteria for land tenure adjustment (e.g., acquisition, exchange, and disposal) within the monument?

- What types of casual and authorized public uses will continue?
- How will recreation and increased visitor use be monitored and managed?
- How will information be provided to educate and inform the public in order to facilitate appropriate use of the CSNM?
- How will the management plan be adaptive in response to new information?

DEVELOPMENT OF MANAGEMENT STRATEGIES AND ALTERNATIVES

Management Strategies

After identifying issues, BLM planning staff began the process of creating strategies for general monument management scenarios, which led to more detailed alternatives. The team's course of action was as follows:

1. Assess the major issues as derived from the public comment phase of the project;
2. Narrow the scope of possible actions to be analyzed in the planning process;
3. Use these refined actions to develop alternative monument management strategies; and
4. Incorporate them into a draft plan for publication.

Alternatives

This process culminated in development of the four alternatives for monument management as described in the draft plan published in June 2002. Alternative A described the continuation of the interim management in the monument, in which the provisions of the proclamation were applied. Alternatives B, C, and D described various ways in which the provisions of the proclamation would be applied to direct management of the monument (Table 1-1). Each alternative had a different emphasis, primarily defined in terms of the degree to which active management would take place across the monument. All alternatives provided the high degree of protection for monument resources required by the proclamation.

Public Comment

A 90-day comment period followed the publication of the draft plan. An overview of the draft plan was presented to the public at Southern Oregon University. In addition to the draft plan, a 24-page "Reader's Guide" was created to provide the public with a condensed explanation of management alternatives. In response to numerous requests, the public comment period was extended for an additional 90 days, closing on December 19, 2002. During this extended comment period, four additional public meetings took place: one at the Medford Red Lion Hotel and three at Pinehurst School in Lincoln, OR. Additionally, monument staff spent one day per week for four weeks in the Greensprings community, answering questions and accepting public comments.

SUMMARY OF PLANNING CONSIDERATIONS AND CRITERIA

Planning Considerations

A variety of legal requirements and directives governing the planning process were considered by the BLM in developing the framework for the draft and proposed management plans of the Cascade-Siskiyou National Monument (CSNM). The following is a summary of key planning considerations.

The Presidential Proclamation (Proclamation 7318 of June 9, 2000)

The proclamation (Appendix A) established the CSNM, described the purposes of the CSNM, and made certain provisions for its management, including the following:

- Federal lands within the monument are withdrawn from all forms of entry, location, selection, sale or leasing related to minerals or geothermal resources;
- Federal lands within the monument boundary will remain in public ownership, unless exchanged for lands that would further protect monument resources;
- Establishment of the monument does not enlarge or diminish the jurisdiction of the State of Oregon with respect to fish and wildlife, including regulation of hunting, trapping and fishing, on federal lands with the monument;
- Livestock grazing will continue with appropriate terms and conditions under existing laws and regulations. The BLM will study the

impacts of livestock grazing on the objects of biological interest in the monument with specific attention to sustaining the natural ecosystem dynamics;

- Valid existing withdrawals, reservations, or appropriations are not revoked by the proclamation, but such uses must be managed to protect monument resources;
- All motorized and mechanized vehicle use is prohibited off-road except for emergency or authorized administrative purposes;
- The commercial harvest of timber or other vegetative material is prohibited except when part of an authorized science-based ecological restoration project aimed at meeting protection and old-growth objectives. Removal of trees from within the monument may take place only if clearly needed for ecological restoration and maintenance or public safety;
- Subject to valid existing rights, reserve a quantity of water sufficient to fulfill the purposes for which the monument is established.

Federal Land Policy and Management and National Environmental Policy Acts

The development of this management plan is guided by the legal authority found in the Federal Land Policy and Management Act (FLPMA) of 1976, as amended, and the National Environmental Policy Act (NEPA) of 1969, as amended. In developing land use plans, FLPMA and NEPA require that the BLM use an interdisciplinary approach and provide opportunities for public involvement and interagency coordination. In addition, FLPMA requires that land use plans:

- give priority to the designation and protection of Areas of Critical Environmental Concern (including Research Natural Areas);
- consider the present and potential uses of public lands;
- consider scarcity of values involved;
- rely on public land inventories;
- comply with pollution-control laws; and
- manage Wilderness Study Areas to ensure their potential wilderness values are not impaired.

Both NEPA and FLPMA require BLM to provide the public with information about the effects of implementing land-use plans.

Oregon and California Act of August 28, 1937

There are approximately 40,156 acres of Oregon and California (O&C) lands in the monument as defined by the O&C Act of 1937. The proclamation establishing the monument states, "Nothing in this proclamation shall be deemed to revoke any existing withdrawal, or appropriation; however, the national monument shall be the dominant reservation." The proclamation also states, "The Secretary of the Interior shall manage the monument through the Bureau of Land Management, pursuant to applicable legal authorities (including, where applicable, the Act of August 28, 1937, as amended (43 U.S.C. 1181a-1181j), to implement the purposes of this proclamation."

The O&C Act of August 28, 1937 requires the Secretary of the Interior to manage O&C lands for permanent forest production in accordance with sustained-yield principles. The Act also requires that management of O&C lands protect watersheds, regulate streamflow, provide for recreational facilities, and contribute to the economic stability of local communities and industries.

Lands administered under the O&C Act must also be managed in accordance with other environmental laws such as the Endangered Species Act and the Clean Water Act. Some provisions of these laws take precedence over the O&C Act and, in accordance with the proclamation; the monument is the dominant reservation. The CSNM proclamation does not change the O&C status of the land, but it does withdraw the land from all forms of entry or disposal under mining, land, and mineral leasing laws. It also removes the timber volume within the CSNM from the BLM Medford District's sustainable harvest level calculations.

Soda Mountain Wilderness Study Area

Since the passage of FLPMA, an area now within the CSNM was recommended for wilderness review. This area, the Soda Mountain Wilderness Study Area (WSA), has been managed, since it was identified, under the BLM's Interim Management Policy (IMP) For Lands Under Wilderness Review (BLM Manual H-8550-1). The objective of the IMP is to manage those lands so as not to impair their suitability for designation as wilderness. The

Soda Mountain WSA will continue to be managed under the IMP, and the monument plan will only be implemented to the extent that it does not conflict with the IMP, unless Congress takes action. If Congress decides not to designate the WSA as wilderness, those lands would then be managed under the provisions of the monument plan.

The evaluation of additional lands for WSA status is outside the scope of this plan. A new bureau-wide policy affecting the wilderness program was established in April 2003 in a settlement agreement to *Utah v. Norton.* The settlement acknowledges: (1) that the BLM's authority to conduct wilderness review, including the establishment of new WSAs, expired no later than October 21, 1993, with the submission of the wilderness suitability recommendations to Congress pursuant to Section 603 of the FLPMA and (2) that the BLM is without authority to establish new WSAs.

Planning Criteria

In addition to the planning considerations described above, the BLM planning regulations (43 CFR 1610) require formal preparation of planning criteria to guide the development of all resource management plans. Planning criteria ensure that plans are tailored to specific issues and help to avoid any unnecessary data collection and analysis. Planning criteria are based on applicable laws, agency guidance, public comments, coordination with other federal, state and local governments, and Native American tribes.

The planning criteria used in developing the proposed plan are as follows:

- The plan will be completed in compliance with FLPMA, NEPA, and all other applicable laws.
- The BLM will work cooperatively with the State of Oregon, tribal governments, county and municipal governments, other federal agencies, and all other interested groups, agencies and individuals.
- The plan will establish the guidance for managing the CSNM.
- The plan will emphasize ecological and historic resources of the CSNM. It will also identify opportunities and priorities for research and monitoring related to the key resource values for which the CSNM was created.
- The plan will identify plant communities and address issues of health, protection and possible restoration.
- The plan will recognize valid existing rights within the CSNM.
- The plan will recognize the state's responsibility to manage hunting, trapping, and fishing.
- The plan will address transportation and access in order to protect CSNM resources and provide for access by identifying where better access is warranted, where access should remain as is, and where decreased access is appropriate.
- The plan will address the need for providing adequate access to non-federally owned lands or interests in land within the greater monument boundary.
- The plan will set forth a framework for managing recreational activities to provide for enjoyment of visitor experiences consistent with the ecological objectives for monument resources.
- The plan will not affect private property rights within the boundaries of the monument.

CHANGES BETWEEN THE DRAFT AND PROPOSED PLAN

During the public comment period for the draft plan, approximately 17,000 comments were received. These comments contained valuable input and were carefully considered, along with new information, additional analysis, and changes in existing laws and regulations, in order to modify the management strategies described in the draft plan. The nature of these changes fall generally into three categories: changes in existing regulations, changes to proposed management, and clarifications.

Changes in Existing Regulations

Other changes are based on modifications in existing laws and regulations that guide management on BLM-administered lands.

Northwest Forest Plan

The draft plan stated that CSNM management would continue to contribute toward the overall Northwest Forest Plan goal of maintaining and restoring forest habitats in accordance with the *Final Supplemental Environmental Impact Statement on the Management of Habitat for Late-Successional and Old-Growth Forest Related Species Within the Range of the Northern Spotted Owl* (USDA/USDI, 1994a). Since the publication of the draft plan, the Northwest Forest Plan has been amended by the *Record of Decision to Remove or Modify the Survey and Manage Mitigation Measure Standards and Guidelines* (USDA/USDI, 2004c). The current proposed plan incorporates by reference the changes outlined in this amendment.

The draft plan also incorporated the Northwest Forest Plan's Aquatic Conservation Strategy (ACS) into monument management through the Monument ACS (Appendix BB in the draft plan). In March 2004, a Record of Decision (ROD) was issued to clarify provisions relating to the Northwest Forest Plan ACS (USDA/USDI March 2004a). The proposed plan incorporates by reference any changes made in this decision to clarify provisions relating to the ACS.

National Fire Plan

In 2001, the U.S. Department of Agriculture Forest Service and the Department of the Interior adopted the National Fire Plan to help protect communities and natural resources—and most importantly, the lives of firefighters and the public. The National Fire Plan is a long-term commitment based on cooperation and communication among federal agencies, states, local governments, Native American tribes, and interested publics. The National Fire Plan consists of a collection of documents and processes that include, but are not limited to, the 10-Year Comprehensive Strategy and its Implementation Plan, the Healthy Forest Restoration Act, and the Federal Cohesive Strategy. It also includes two handbooks developed by the Association of State Foresters: one for identifying communities at risk and the other for preparing community protection plans. This proposed plan identifies strategies consistent with the National Fire Plan for protecting monument resources, communities at risk, and private property from wildland fire.

Changes to Proposed Management

Some changes or modifications to proposed management have been made since publication of the draft plan. These changes are based on public comment and new information.

Livestock Grazing Operations

Public comments indicated a need for additional information and management direction regarding existing livestock operations in the monument. The draft plan refrained from addressing management issues for current livestock grazing allotments, or from addressing the environmental consequences of existing grazing management. The proposed plan defers most decisions regarding livestock grazing allotments until completion of the Livestock Impact Study and a lease renewal process. However, in response to comments, this plan differs from the draft in the following ways:

- The plan proposes some decisions that could affect existing livestock operations, vacant allotments, or lands not currently under grazing leases;
- The plan provides a framework for making future decisions regarding livestock operations;
- The plan analyzes some impacts of existing grazing management on monument resources.

Old-Growth Emphasis Area

In response to public comments, additional analysis has been done regarding the scope and type of treatments in the Old-Growth Emphasis Area (OGEA). In the draft plan, proposed treatments in this area were primarily focused on managing young stands and reducing fire hazard near existing old-growth habitat. The analysis in this plan considers those factors, and also incorporates the need to restore habitat connectivity in certain areas, concerns about fire hazard in the wildland-urban interface, and the loss of pine forests on historic pine sites.

Riparian Areas and Aquatic Resources

A management section has been added that specifically addresses management concerns and objectives related to riparian areas and aquatic resources. The purpose of this section is to help highlight the importance of riparian areas and aquatic resources in the monument, and to acknowledge that these areas cross the boundaries identified for the Diversity Emphasis Area and Old-Growth Emphasis Area.

Recreation and Visitor Services

The draft plan identified "primary recreation use zones" that were referenced in the plan as areas of high visitor use. These included areas along the Soda Mountain road, Pilot Rock, Highway 66, and the Hyatt Lake Recreation Area. In response to public concerns related to the identification of these zones, the proposed plan does not identify these zones or use them as a tool in the planning process.

Clarifications

Other changes made since publication of the draft plan include technical corrections such as errors in addition, inaccuracies in maps, and other errors. These items raised in public comments or found internally are corrected within the proposed plan. Additionally, many of the changes between the draft and proposed plans are clarifications based on misunderstandings or requests for more information.

WHAT'S NEXT IN THE PLANNING PROCESS?

Upon publication of this plan, a 30-day protest period and a 60-day Governor's consistency review will be held (protest procedures are outlined at the beginning of this document). The Record of Decision (ROD) and the Approved Management Plan will then be prepared. Approval will be withheld on any portion of the proposed plan under protest until final action has been completed on any protests. Distribution of the ROD/Approved Plan is expected to occur early in 2005.

PLAN IMPLEMENTATION

The proposed plan would be implemented over a 10-year timeframe, as funding allows. Most of the land use plan decisions are effective upon approval of this document. However, many decisions will take a number of years to implement on the ground. Some of the decisions contained in this document will require the preparation of detailed, project-level NEPA analyses prior to implementation. Public involvement opportunities, including further protest or appeal opportunities, may be provided at that time.

Decisions made in this plan can be placed into four categories:

- RMP-level decisions such as land allocations and program constraints (e.g., management zones and limits on recreation uses);
- Existing decisions carried forward (e.g., RNA boundaries);
- Future actions that are likely to require future NEPA analysis (e.g., thinning in the OGEA); and
- New implementation decisions (road decommissioning).

RMP-level decisions and new implementation decisions are subject to protest and appeal procedures at the time the ROD for this plan is signed. Existing decisions that are being carried forward are not subject to protest and appeal procedures. Future actions requiring additional NEPA analysis are not subject to protest and appeal procedures until a site-specific decision is proposed.

PLAN MAINTENANCE

Minor changes, refinements, or clarifications in the RMP, including incorporating new data, are called "plan maintenance actions." Plan maintenance actions do not expand the scope of resource uses or restrictions, nor do they change the terms, conditions, or decision of the approved plan. Plan maintenance could also include incorporation of newly acquired lands into existing management decisions and strategies. Maintenance actions are not considered plan amendments or revisions and do not require formal public involvement and interagency coordination. However, these types of actions will be reported in periodic planning updates.

Table 1-1. Comparison Summary of Alternatives and Proposed Management

Table 1-1 provides a comparison summary of the alternatives proposed in the draft plan and the decisions in the proposed plan. More detail on Alternatives A through D can be found in the DRMP/DEIS, published June 2002. More detail on the decisions in the proposed plan can be found in Chapter 2 of this document.

Table 1-1. Comparison of Alternatives

	Alternative A Draft Plan/DEIS No Action	Alternative B Draft Plan/DEIS	Alternative C Draft Plan/DEIS Preferred	Alternative D Draft Plan/DEIS	Proposed Management Plan/FEIS
Vegetation Management of the Old-Growth Emphasis Area	**Implement protective measures identified in the presidential proclamation.** • Survey plant communities to establish extent and condition. • Monitor existing sites.	**Promote continued and accelerated development of late-successional and old-growth habitat by treating early to mid-seral stage conifer stands that have the potential to become late-successional and old-growth habitat (Habitat Type 3 (young)).** • Reforestation of land with the potential to produce late-successional and old-growth habitat. • Implement density management treatments of established conifer stands in Habitat Type 3, either plantations or natural stands, in order to accelerate their development towards late-successional and old-growth habitat. • Approximately 3,400 acres (14 percent) of the OGEA (Habitat Type 3 only) would be treated. • All thinning treatments proposed would be non-commercial (under seven inches in diameter).	**Protect existing and potential late-successional and old-growth habitat from catastrophic disturbance.** • Reduce high fuel hazards along the ridge line that separates the north and south management zones. • Reduce the fuel loading in all stands (Habitat Types 3, 4, 5 and 6) with high fire hazard within 1/4 mile of existing late-successional and old-growth habitat (Habitat Types 1 and 2). • Reduce fuel loadings and accelerate progression toward desired old-growth stand characteristics in Habitat Type 3 that have a moderate fire hazard and are within 1/4 mile of existing late-successional and old-growth habitat. • Reduce fuel loadings within existing late-successional and old-growth habitat (Habitat Types 1 and 2) that has high fire hazard. • Re-establish trees in areas where stand replacement events have occurred if needed. • Treat activity fuels (excess slash that results from stand treatments). • Approximately 7,726 acres (32 percent) of the OGEA would be treated.	**Incorporate the objectives of Alternative C with additional measures to protect and/or enhance existing late-successional and old-growth habitat (Habitat Types 1 and 2 (old growth and mature)).** In addition to the vegetation and fuel treatments proposed in Alternative C, this alternative includes: • Commercial thinning of late-successional and old-growth habitat (Habitat Types 1 and 2) that has high fire hazard to open canopy, decrease vegetation competition, increase tree vigor and reduce fuel ladders (same stands identified in Alternative C). • Reduce fuel loadings within all Habitat Type 5 (dispersal) stands within 1/4 mile of existing late-successional and old-growth habitat that have moderate fuel hazard. Commercial and non-commercial thinning could occur before fuel reduction treatments if necessary. • Approximately 14,126 acres (59 percent) of the OGEA could be treated.	**Maintain, protect, and restore conditions of late-successional and old-growth forest ecosystems in order to promote habitat and enhance connectivity for old-growth associated species.** Three strategic geographical areas would be treated as follows: • **Wildland-Urban Interface (WUI):** Thinning and prescribed fire could be used in up to 70 acres of Habitat Type 3 (young) and up to 460 acres of Habitat Type 5 (dispersal) to enhance ecological integrity. Pilot treatments could take place in Habitat Type 2 (mature) (up to 200 acres). • **Connectivity Area:** Thinning and prescribed fire could be used on 1,410 acres of Habitat Type 3 stands to enhance ecological integrity. Thinning and prescribed fire treatments could be applied on 1,140 acres of Habitat Type 5 stands. • **Young Stands:** Thin up to 2,385 acres of Habitat Type 3 (young) stands outside the WUI and Connectivity Area to promote stand development that more closely patterns historic development. • With prior written authorization, homeowners could be permitted to create defensible space around their structures. • Approximately 5,665 acres (22 percent) of the OGEA would be treated.
		• Effectiveness monitoring of all treated sites.			
	• Noxious weed treatments.				

Table 1-1. Comparison of Alternatives

	Alternative A Draft Plan/DEIS No Action	Alternative B Draft Plan/DEIS	Alternative C Draft Plan/DEIS Preferred	Alternative D Draft Plan/DEIS	Proposed Management Plan/FEIS
Vegetation Management of the Diversity Emphasis Area	**Implement protective measures identified in the presidential proclamation.** • Survey plant communities to establish extent and condition. • Install enclosures as part of the study mandated by the proclamation to evaluate livestock effects on the objects of biological interest in the monument and to protect monument objects. • Monitor existing sites.	**Limit management intervention, allowing natural processes (succession, wildfire, etc.) to attain plant community diversity.** • Survey and monitor plant communities (including listed and sensitive plants). • Noxious weed control would be the primary vegetation managment.	**Maintain individual plant species, plant communities, as well as the full range of plant and wildlife characteristics of each plant community.** **Grasslands: Within each subwatershed:** • Use prescribed fire to remedy degradation in up to 20 percent of the native grasslands. Pilot studies would be required to treat areas greater than 20 acres. • Use defoliation (fire) treatments on up to 15 percent of the native grasslands that are being invaded by annuals. • Apply at least three years of defoliation (fire) and/or herbicide treatments on up to 10 percent of the annual grass monoculture areas. • Use prescribed fire to reinitiate stands of shrubs could occur on up to 20 percent of the wedgeleaf ceanothus stands. **Woodlands: Within each subwatershed, use prescribed fire and manual treatments:** • To reduce conifer canopy cover on up to 25 percent of the oak woodlands. • Treat up to 20 percent of the shrub-invaded oak woodlands. • Following successful pilot studies, treat 10 percent of the dense oak woodland stands.	**Protect, maintain, restore and enhance plant communities incorporating all tools available for an aggressive approach as compared to Alternatives B and C.** • Vegetation management strategy is the same as for Alternative C. • Facilitates management intervention in areas where tools defined in Alternative C are ineffective or not feasible to apply (e.g. steep slope, adjacent to private land, high fuel loading). • Use of tractor mounted and mechanical contrivances allows treatment over a larger area of the monument. • Available tools include herbicide, manual weeding, plowing/discing, slashbuster, moving, bio-control, prescribed fire, fence construction, manual chipping and thinning, mechanical thinning, native plant establishment, weed-eater, helicopters, chainsaws, handheld and tractor-driven auger.	**Control the spread of noxious weeds and invasive grasses, prevent the loss of fire-dependent plant species and communities, protect monument resources from fires originating on adjacent private lands, and reduce the risk of wildland fires spreading to residential properties in the Wildland Urban Interface (WUI).** • Enhance the knowledge of the DEA through the implementation of pilot studies. Pilot studies would be limited to 10 acres, except broadcast burning which would be limited to 100 acres in size and no more than 200 acres annually. Other types of prescribed burning would be limited to 10 acres. • Pilot treatments would examine methods to remedy grassland degradation, annual grass invasion and monoculture in the grasslands; rejuvenation and management of wedgeleaf ceanothus stands in the shrublands; and conifer invasion, thinning and shrub reduction, and prevention of the loss of the old-growth component in the woodlands. • Following pilot studies, new objectives or management direction could be developed for the DEA in accordance with the monument's adaptive management strategy. • Treat up to 50 percent of the DEA lands within the WUI to reduce fire hazard. Treated and untreated areas would be interspersed.
		• Effectiveness monitoring of all treated sites.			
	• Noxious weed treatments.				

Table 1-1. Comparison of Alternatives

	Alternative A Draft Plan/DEIS No Action	Alternative B Draft Plan/DEIS	Alternative C Draft Plan/DEIS Preferred	Alternative D Draft Plan/DEIS	Proposed Management Plan/FEIS
Riparian Management	• All actions/treatments would be consistent with the Aquatic Conservation Strategy as amended. • Best Management Practices (BMPs) would be followed during project implementation to mitigate adverse effects to water, fish, and riparian habitat.				
		• Partnerships with private landowners, watershed councils, state and other federal agencies would be pursued to protect, restore, and enhance riparian areas and aquatic ecosystems across ownership boundaries. • Conduct restoration and enhancement activities that benefit aquatic habitat and water quality throughout the monument. These activities may include, but are not limited to, planting vegetation in riparian areas; stabilizing streambanks; placing instream habitat structures (e.g., logs, boulders); fencing springs and wetlands; and upgrading or decommissioning roads.			
		• Limited management intervention.	• Survey all wetland and riparian plant communities to quantify restoration needs. • Initiate restoration of hydrologic function where necessary. • Use fencing to exclude livestock and/or alter livestock management using herding or salt to facilitate wetland plant community recovery. • Inventory woody vegetation of all wetlands, riparian areas, springs, and seeps prior to replanting or weed control. • Continue riparian planting on the former Box-O Ranch and manage bottom land pastures to allow for woody tree establishment.	• Riparian management is the same as for Alternative C, except all management tools are available to meet objectives.	• Proper Functioning Condition surveys would be completed to provide a landscape-wide assessment of riparian areas and help prioritize riparian areas for restoration. • A Water Quality Restoration Plan (WQRP) would be prepared to address restoration of water quality limited streams (303(d) list) in the monument. • Ongoing floodplain restoration at the former Box-O Ranch would continue in order to establish a mature riparian hardwood-dominated forest that integrates oak woodlands within the extended floodplain. • In the OGEA, thinning small diameter trees in riparian reserves would be considered in areas where fire exclusion has created dense stands of small diameter conifers. • Prescribed fire could be used in some riparian areas to restore plant community structure. In these situations, prescribed fire from adjacent units would be allowed to creep or back into riparian reserves.
		• Effectiveness monitoring of all treated sites.			
	• Noxious weed treatments.				

Table 1-1. Comparison of Alternatives

	Alternative A Draft Plan/DEIS No Action	Alternative B Draft Plan/DEIS	Alternative C Draft Plan/DEIS Preferred	Alternative D Draft Plan/DEIS	Proposed Management Plan/FEIS
Transportation System					
Open Roads	174 mi.	168 mi.	174 mi.	171 mi.	168 mi.
Improve and Leave Open Roads	0 mi.	3 mi.	0 mi.	3 mi.	4 mi.
Closed Roads	77 mi.	31 mi.	25 mi.	19 mi.	21 mi.
Decommissioned Roads	0 mi.	49 mi.	52 mi.	58 mi.	53 mi.
Totals	251 mi.	251 mi	251 mi.	251 mi.	246* mi.
	Following monument designation, the following roads were closed to use by unauthorized vehicles as part of interim management: • Closed **Schoheim Road (41-2E-10.1)** except between the southwest section line of T.30S., R.4E., Sec. 4 and the Copco Road where it provides access to private property. • Closed **Randcore Pass Road (40-4E-19.2)** past the junction with Road 40-4E-31.0. • Closed **Skookum Creek Road (40-2E-28 and 40-3E-27.2)** past the junction with Road 40-3E-27.1. • Closed **Pilot Rock Road (41-2E-3.0)** past the point where it crosses the Pacific Crest Trail.	• **Schoheim Road (41-2E-10.1):** The western portion would be closed and left to decommission naturally; the eastern portion would be closed for use by unauthorized vehicles except between the southwest section line of Section 4, T.40S., R.4E. and the Copco Road where it provides access to private property. • **Randcore Pass Road (40-4E-19.2):** Past the junction with Road 40-4E-31.0 would be closed for use by unauthorized vehicles. • **Skookum Creek Road (40-2E-28 and 40-3E-27.2):** Past the junction with Road 40-3E-27.1 would be closed for use by unauthorized vehicles. • **Pilot Rock Road (41-2E-3.0):** Past the point where it crosses the Pacific Crest Trail would be closed and left to decommission naturally.	• **Schoheim Road (41-2E-10.1):** The western portion would be closed and mechanically decommissioned; the middle portion would be closed and left to decommission naturally; and the eastern portion would be closed for use by unauthorized vehicles except between the southwest section line of Section 4, T.40S., R.4E. and the Copco Road where it provides access to private property. • **Randcore Pass Road (40-4E-19.2):** Past the junction with Road 40-4E-31.0 would be closed for use by unauthorized vehicles. • **Skookum Creek Road (40-2E-28 and 40-3E-27.2):** Past the junction with Road 40-3E-27.1 would be improved and closed to unauthorized vehicles November 15 through April 15 down to where Section 36, T.40S., R.3E. and Section 1, T.41S., R.3E. meet; and closed to unauthorized vehicles (all year) past the common line of Section 36 and Section 1.	• **Schoheim Road (41-2E-10.1):** Most of the road would be mechanically decommissioned; the eastern portion would be closed for use by unauthorized vehicles except between the southwest section line of Section 4, T.40S., R.4E. and the Copco Road where it provides access to private property. • **Randcore Pass Road (40-4E-19.2):** Past the junction with Road 40-4E-31.0 would be closed and mechanically decommissioned. • **Skookum Creek Road (40-2E-28 and 40-3E-27.2):** Past the junction with Road 40-3E-27.1 would be improved and left open to the public down to where Section 36, T.40S., R.3E. and Section 1, T.41S., R.3E. meet; and closed to unauthorized vehicles past thé common line of Section 36 and Section 1.	• **Schoheim Road (41-2E-10.1):** The western and middle portions (Map 22) have been closed and would be decommissioned; the eastern portion would be closed for use by unauthorized vehicles except east of the gate at the Jenny Creek crossing in Section 9, T.41S., R.4E. to the Copco Road (40-4E-3.1), where it provides access to private property. • **Randcore Pass Road (40-4E-19.2):** South of the junction with Road 40-4E-31.0 would be closed for use by unauthorized vehicles. • **Skookum Creek Road (40-2E-28 and 40-3E-27.2):** Past the junction with Road 40-3E-27.1 would be improved and left open to the public down to where Section 36, T.40S., R.3E. and Section 1, T.41S., R.3E. meet; and closed to unauthorized vehicles past the common line of Section 36 and Section 1. • **Pilot Rock Road (41-2E-3.0) and Pilot Rock Access Road (41-2E-33):** Improve and maintain the existing parking facility at the rock quarry; decommission Road 41-2E-3.0 beyond the quarry. A trail would provide access to Pilot Rock.

*The proposed plan shows 246 miles of BLM controlled roads; the draft plan showed 251 miles. Calculations for the draft plan included some roads that had previously been decommissioned. For the proposed plan, roads that had been decommission prior to monument designation were not included in calculations.

Table 1-1. Comparison of Alternatives

	Alternative A Draft Plan/DEIS No Action	Alternative B Draft Plan/DEIS	Alternative C Draft Plan/DEIS Preferred	Alternative D Draft Plan/DEIS	Proposed Management Plan/FEIS
Transportation System (Continued)	• Closed **Road 41-2E-9.0** past the barricade in the SW1/4 NW 1/4, Section 9, T.41S., R.2E. • Closed **Lone Pine Ridge Road (40-3E-31)** past the road block in Section 31, T.40S., R.3E. • Closed **Road 41-4E-7.0** which crosses the Oregon-California border at the section line between Sections 7 and 18, T.41S., R.4E. • Closed **Road 41-4E-12.0** which crosses the Oregon-California border at the south section line of Section 13, T.41S., R.2E.	• **Pilot Rock Access Road (40-2E-33):** Close where it intersects Highway 99 with a gate to prevent vehicle access. • **Pilot Rock Jeep Roads:** Seasonally close (October 15-May 15) with gates. • **Road 41-2E-9.0:** Past the barricade in the SW1/4 NW 1/4, Section 9, T.41S., R.2E. would be closed and left to decommission naturally. • **Lone Pine Ridge Road (40-3E-31):** Past the road block in Section 31, T.40S., R.3E. would be closed and left to decommission naturally. • **Road 41-4E-7.0:** This road crosses the Oregon-California border at the section line between Sections 7 and 18, T.41S., R.4E. and would be closed for use by unauthorized vehicles. • **Road 41-2E-12.0:** This road crosses the Oregon-California border at the south section line of Section 13, T.41S., R.2E. and would be closed and left to decommission naturally.	• **Pilot Rock Road (41-2E-3.0):** Past the point where it crosses the Pacific Crest Trail would be closed and mechanically decommissioned. • **Pilot Rock Access Road (40-2E-33):** Maintain in current condition and acquire full public access. • **Road 41-2E-9.0:** Past the barricade in the SW1/4 NW 1/4, Section 9, T.41S., R.2E. would be closed and mechanically decommissioned. • **Lone Pine Ridge Road (40-3E-31):** Past the road block in Section 31, T.40S., R.3E. would be closed and left to decommission naturally. • **Road 41-4E-7.0:** This road crosses the Oregon-California border at the section line between Sections 7 and 18, T.41S., R.4E. and would be closed for use by unauthorized vehicles. • **Road 41-2E-12.0:** This road crosses the Oregon-California border at the south section line of Section 13, T.41S., R.2E. and would be closed and mechanically decommissioned. • **Soda Mountain Lookout Road (40-3E-21.1):** Improve for extended-season use and install a gate on Road 40-3E-21.2 where it takes off to the lookout.	• **Pilot Rock Road (41-2E-3.0):** Past the point where it crosses the Pacific Crest Trail would be closed and mechanically decommissioned. • **Pilot Rock Access Road (40-2E-33) and Pilot Rock Road before the PCT(40-2E-3.0):** Improve to allow all season use. • **Road 41-2E-9.0:** Past the barricade in the SW1/4 NW 1/4, Section 9, T.41S., R.2E. would be closed and mechanically decommissioned. • **Lone Pine Ridge Road (40-3E-31):** Past the road block in Section 31, T.40S., R.3E. would be closed and mechanically decommissioned. • **Road 41-4E-7.0:** This road crosses the Oregon-California border at the section line between Sections 7 and 18, T.41S., R.4E. and would be closed for use by unauthorized vehicles. • **Road 41-2E-12.0:** This road crosses the Oregon-California border at the south section line of Section 13, T.41S., R.2E. and would be closed and mechanically decommissioned. • Improve **spur road** in Section 21, T.40S., R.3E. that ties back into Road 39-3E-32.3. • Explore acquiring access to public use areas.	• **Road 41-2E-9.0:** Past the corral in the SW1/4 NW1/4, Section 9, T.41S., R.2E. would be closed and decommissioned. • **Lone Pine Ridge Road (40-3E-31):** Past the road block in Section 31, T.40S., R.3E. would be closed and decommissioned. • **Road 41-4E-7.0:** This road crosses the Oregon-California border at the section line between Sections 7 and 18, T.41S., R.4E. and would be closed for use by unauthorized vehicles. • **Road 41-2E-12.0:** This road crosses the Oregon-California border at the south section line of Section 13, T.41S., R.2E. and would be closed and decommissioned. • **Soda Mountain Lookout Road (40-3E-21.1):** Improve for extended-season use from its junction with Road 40-3E-21.2. Road 40-3E-21.2 would also be improved for extended-season use. A gate would be installed on Road 40-3E-21.2 where it takes off to the lookout. • **Yew Springs Road (39-4E-7.5), Wildcat Glade Road (39-3E-11), Beaver Creek Road (40-3E-3.1), and South-East Hyatt Lake Road (40-3E-3):** Closed with gates from November 15 (as snowfall dictates) through April 15 for winter recreation use.

Table 1-1. Comparison of Alternatives

	Alternative A Draft Plan/DEIS No Action	Alternative B Draft Plan/DEIS	Alternative C Draft Plan/DEIS Preferred	Alternative D Draft Plan/DEIS	Proposed Management Plan/FEIS
Recreation and Visitor Services					
Bicycles	• Allowed on designated roads which are open to public access (Map 20).				
			• Additional roads could be designated for use in the future.		• Allowed on most designated roads that are open to administrative use but otherwise closed to motorized vehicle access. • Not allowed on the Pacific Crest Trail. • Not allowed on roads closed by the proclamation or roads identified for decommissioning.
				• Construction of new roads for bicycle use could be considered in the future.	
Campfires	• All campfires would be consistent with the State of Oregon regulations (Oregon Department of Forestry).				
	• Allowed.	• Allowed in fire pits at the Hyatt Lake Recreation Area and "leave no trace" campfires are allowed in association with PCT camping.	• Allowed in fire pits at the Hyatt Lake Recreation Area and "leave no trace" campfires are allowed in association with PCT camping. • Not allowed in RNAs.		• Allowed throughout the monument except within areas where camping is prohibited.
Climbing	• Technical rock climbing allowed.	• Technical rock climbing not allowed.		• Technical rock climbing only allowed on Pilot Rock (see Pilot Rock section below).	
Collections and Special Forest Products	• No collection and/or harvesting of special forest products except for administrative purposes (e.g., reasearch and monitoring) and traditional Native American gathering.		• No commercial collection of any special forest products. • Fungi/mushroom collection for personal use would be allowed. • Special use permits would be issued for the collection of plant materials including fungi/mushrooms when used for traditional Native American gathering or administrative purposes (including approved research projects). • In activity areas where adequate coarse woody debris exists, excess material would be moved to slash decks for firewood. Permits would be issued to cut firewood from these slash decks.		• No collection of any monument resources such as rocks, petrified wood, fossils, archaeological and cultural items, plants and plant parts, fish and animals not regulated by ODFW, insects or other invertebrate animals, bones waste and other products from animals. • Exceptions include collections authorized by permit in conjunction with the following activities: ⇨Authorized research or management. Collection of the following: ⇨Fruits, nuts, berries and mushrooms for personal non-commercial use, not-to-exceed one gallon per day. ⇨Certain natural materials by Native Americans under BLM permit. ⇨Antlers or horns as provided by ODFW regulations. ⇨Dead and down wood for immediate use in campfires, where allowed. • Christmas tree cutting is not allowed.
			• Permits for rocks/gems and petrified wood would be issued in predesignated areas for educational purposes as long as the collection does not interfere with the protection of monument resources.	• Permits for rocks/gems and petrified wood would be issued in predesignated areas for personal use as long as the collection does not interfere with the protection of monument resources.	

Table 1-1. Comparison of Alternatives

<table>
<tr><th></th><th>Alternative A
Draft Plan/DEIS
No Action</th><th>Alternative B
Draft Plan/DEIS</th><th>Alternative C
Draft Plan/DEIS
Preferred</th><th>Alternative D
Draft Plan/DEIS</th><th>Proposed
Management Plan/FEIS</th></tr>
<tr><td colspan="6">Recreation and Visitor Services (Continued)</td></tr>
<tr><td rowspan="2">Dispersed Camping</td><td rowspan="2">• Camping allowed throughout the monument. In RNAs, must not interfere with protection/maintenance of key characteristics.</td><td rowspan="2">• Dispersed camping not allowed, except along PCT.
• Camping only allowed at existing campgrounds in the Hyatt Lake Recreation Area.</td><td colspan="2">• Dispersed "no trace" camping allowed throughout the monument, except for the Hyatt Lake Recreation Area, the RNAs and in structures at the former Box-O Ranch.
• Camping within the Hyatt Lake Recreation Area is restricted to designated sites.
• Organized groups with existing permits would be allowed to continue with no guarentee of renewal. Renewal would be approved if the activity is consistent with the protection of monument resources.
• Group camping for administrative purposes would be allowed throughout the monument as long as it does not conflict with resource and monument object protection.</td><td rowspan="2">• Dispersed "no trace" camping allowed throughout the monument, except for the Hyatt Lake Recreation Area, the RNAs, in structures at the former Box-O Ranch, archaeological or cultural sites, riparian areas, threatened and endangered plant sites, or other areas that could be easily damaged by camping.
• Groups larger than 12 would not be allowed to camp in the south management zone (Map 4) without prior authorization.
• Group camping in the south management zone (Map 4) in excess of 12 would be allowed for administrative purposes (e.g., survey crews, fire crews, and authorized research) as long as the activity does not interfere with the protection of monument resources.</td></tr>
<tr><td>• No new applications for dispersed group camping would be accepted.</td><td>• Groups of 12 or more persons planning to camp outside the Hyatt Lake Recreation Area would be required to obtain a permit.
• A limited number of new group camping applications would be accepted for analysis and possible approval.</td></tr>
<tr><td>Hang Gliding and Para-Sailing</td><td>• Allowed throughout the monument. In RNAs, must not interfere with protection/maintenance of key characteristics.</td><td>• Not allowed.</td><td>• Allowed only in designated areas and by permit.</td><td>• Allowed throughout the monument with the exception of the WSA and the RNAs.</td><td>• Allowed only in designated areas and by permit.
• Not allowed on Pilot Rock.</td></tr>
<tr><td>Hiking</td><td>• Allowed throughout the monument. In RNAs, must not interfere with protection/maintenance of key characteristics.</td><td>• Allowed throughout the monument. In RNAs, restricted to existing roads and trails.</td><td>• Allowed throughout the monument. In RNAs, restricted to existing roads and trails.</td><td>• Allowed throughout the monument. In RNAs, restricted to existing roads and trails.</td><td>• Allowed throughout the monument.
• Groups larger than 25 would be required to contact monument staff for information and ways to mitigate possible resource damage in sensitive areas.</td></tr>
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Table 1-1. Comparison of Alternatives

	Alternative A Draft Plan/DEIS No Action	Alternative B Draft Plan/DEIS	Alternative C Draft Plan/DEIS Preferred	Alternative D Draft Plan/DEIS	Proposed Management Plan/FEIS
Recreation and Visitor Services (Continued)					
Hunting and Fishing	• Hunting and fishing activities required to comply with the regulations set by the Oregon Department of Fish and Wildlife.				
					• Non-motorized game carriers allowed on roads open to motorized and mechanized access, as well as most designated roads that are open to administrative use but otherwise closed to motorized vehicle access. • Non-motorized game carriers not allowed on the PCT or on roads closed by the proclamation or those roads identified for decommissioning.
Hyatt Lake Recreation Area	• Camping within the Hyatt Lake Recreation Area would be restricted to designated sites. • Future modifications within the Hyatt Lake Recreation Area would be evaluated and undertaken as needs are identified.				
Motorized and Mechanized Recreation	• Cross-country travel by motorized and mechanized vehicles is prohibited throughout the monument. • Persons requiring wheelchairs for mobility may use a motorized or mechanized wheelchair to access any area in the monument.				
Paint Ball	• Allowed.	• Not allowed until analyzed by monument staff.			• The discharging of paint ball guns not allowed within or into the monument.

Table 1-1. Comparison of Alternatives

	Alternative A Draft Plan/DEIS No Action	Alternative B Draft Plan/DEIS	Alternative C Draft Plan/DEIS Preferred	Alternative D Draft Plan/ DEIS	Proposed Management Plan/FEIS
Recreation and Visitor Services (Continued)					
Parking	• Parking off-road would be permissible only at designated sites.				• Parking within the road prism would be required, preferably on hardened surfaces. • Drivers should avoid parking in wet areas and should not park in areas where vegetation damage could easily occur. • Maintenance of the following parking facilities would continue: ⇨PCT parking along Soda Mountain Road (39-3E-32.3), Section 16, T.40S., R.3E. ⇨PCT parking at Porcupine Gap along Road 40-2E-33-3.0, Section 35, T.40S., R.2E. ⇨Horse corrals along old Highway 99, Section 9, T.41S., R.2E. ⇨Designated areas within the Hyatt Lake Recreation Area, Sections 15, 21, and 22, T.39S., R.3E. ⇨PCT and Pilot Rock parking facility at the rock quarry along the Pilot Rock Road (40-2E-33), Section 3, T.41S., R.2E.
	• New parking facilities allowed only as needed for resource protection.	• Any existing, non-designated off-road parking would not be authorized for use and may be signed and rehabilitated. • Designated parking facilities include: ⇨PCT parking along Soda Mountain Road (39-3E-32.3), Section 16, T.40S., R.3E. ⇨PCT parking at Porcupine Gap along Road 40-2E-33-3.0, Section 35, T.40S., R.2E. ⇨Horse corrals along old Highway 99, Section 9, T.41S., R.2E. ⇨Designated areas within the Hyatt Lake Recreation Area, Sections 15, 21, and 22, T.39S., R.3E.	• Provides for the maintenance of existing parking facilities as described under Alternative B plus designated parking areas at the following locations: ⇨PCT and Pilot Rock trail parking at the end of Road 40-2E-33-3.0, Section 3, T.41S., R.2E. ⇨Pilot Rock parking facility at the rock quarry along the Pilot Rock Road (40-2E-33), Section 3, T.41S., R.2E. • Allows for improvement and alteration of existing parking facilities located within the primary recreation use zones (Map 42 of the draft plan).	• Provides for the maintenance of existing parking facilities as described under Alternative C plus allows construction of new parking facilities within the monument.	
Pilot Rock					
Climbing (Technical) on Pilot Rock	• Allowed.	• Not allowed.		• Allowed only on Pilot Rock. • Use of power augers for the placement of permanent protective devices not allowed. • All protection on the rock used in technical climbing would be removed after completion of the climb.	• Allowed on Pilot Rock subject to the following restrictions: ⇨Prohibited on the south and east sides of Pilot Rock from February 1 to July 30 each year. ⇨New fixed anchors could be established to the extent that they do not detract from the geologic resource or impair the quality of the current climbing experience. ⇨Bolts needed for fixed anchors may only be installed using a non-mechanized hand drill hammer. ⇨No permit system would be established at this time. ⇨Use would be monitored and a climbing plan may be necessary.

Table 1-1. Comparison of Alternatives

	Alternative A Draft Plan/DEIS No Action	Alternative B Draft Plan/DEIS	Alternative C Draft Plan/DEIS Preferred	Alternative D Draft Plan/DEIS	Proposed Management Plan/FEIS
Recreation and Visitor Services (Continued)					
Pilot Rock (Continued)					
Hiking on Pilot Rock	• Hiking up the chute on the north side of the rock is allowed without restrictions.				
					• Hikers instructed to avoid accessing the south and east sides of Pilot Rock from the summit. • A subsequent site-specific environmental analysis would determine a more stable access route. • The Pilot Rock Road would be decommissioned beyond the quarry and a trail would allow access to Pilot Rock.
Recreational Animal Stock Use	• Allowed throughout the monument. In RNAs, must not interfere with protection/maintenance of key characteristics. • Commercial recreational animal stock use not allowed.	• All animal stock use is prohibited, included commercial dog sled and sleigh ride activities around Hyatt Lake.	• Not allowed in RNAs. • Recreational animal stock use allowed off-road in the remainder of the monument with the following restrictions: ⇨Four animals per group on overnight trips. ⇨Six animals per group on day trips. ⇨Animals not allowed to overnight within 200 feet of any water's edge. ⇨Not allowed in south management zone (Map 4) from November 15 to May 1. • Commercial recreational animal stock use not allowed.	• Not allowed in RNAs. • Recreational animal stock use allowed off-road in the remainder of the monument with the following restrictions: ⇨Eight animals per group on overnight trips. ⇨Twelve animals per group on day trips. ⇨Animals not allowed to overnight within 100 feet of any water's edge. ⇨Animals would consume only weed-free feed 24 hours prior to entering the monument. Only certified weed-free feed may be used. (Continued on next page.)	• Recreational animal stock use allowed off-road in the monument with the following restrictions: ⇨Four animals per group on overnight trips. ⇨Six animals per group on day trips. ⇨Animals not allowed to overnight within 200 feet of any water's edge. ⇨Stock users would be encouraged to feed certified weed-free feed 24 hours prior to entering the monument.

Table 1-1. Comparison of Alternatives

	Alternative A Draft Plan/DEIS No Action	Alternative B Draft Plan/DEIS	Alternative C Draft Plan/DEIS Preferred	Alternative D Draft Plan/DEIS	Proposed Management Plan/FEIS
Recreation and Visitor Services (Continued)					
Recreational Animal Stock Use (Continued)				• Up to three commercial recreational animal stock use permits could be issued annually with the same restrictions as above including the following: ⇨Special stipulations to protect monument resources. ⇨Only allowed to use designated routes and campsites. ⇨Animals not allowed to overnight within 200 feet of any water's edge. ⇨Commercial stock activities are not allowed in the south management zone (Map 4) from November 15 to May 1. • Recreational animal sledding allowed on designated roads/trails throughout the monument, except in RNAs. • Up to three permits could be issued for animal sledding in the north management zone (Map 4).	
Snowmobiles	• Allowed on roads in the designated areas listed on Map 53 in the draft plan.	• Not allowed.	• Allowed on all BLM-administered roads in the north management zone (Map 4).	• Allowed on all BLM-administered roads in the monument.	• Allowed on open roads in the north management zone (Map 4). • Not allowed on roads that are decommissioned. • Cross-country travel by snowmobiles is not allowed throughout the monument. • Existing snowmobile trails are shown on Map 25.
Trails	• No new hiking trails would be constructed or designated.		• New hiking trail construction or designation could occur within the designated primary recreation use zones (Map 42 of the draft plan).	• New hiking trail construction or designation could be approved if analysis shows compatibility with monument resources.	• New trail construction or designation would only be considered to improve access in areas where visitation is resulting in degradation of monument resources. • The BLM would not conduct thinning operations within 250 feet on either side of the Pacific Crest Trail. • The existing path to Pilot Rock would be evaluated in a site-specific environmental analysis.

Table 1-1. Comparison of Alternatives

	Alternative A Draft Plan/DEIS No Action	Alternative B Draft Plan/DEIS	Alternative C Draft Plan/DEIS Preferred	Alternative D Draft Plan/DEIS	Proposed Management Plan/ FEIS
Recreation and Visitor Services (Continued)					
Visitor Facilities	• New trailheads, toilets, etc. are allowed only as needed for resource protection.	• Maintenance of visitor facilities for resource protection and safey would be allowed. • Alterations, expansion or construction would not be allowed. • No new permanent or temporary toilets allowed. • No drinking water sources would be developed at any site.	• Allows for improvement and alteration of existing facilities. • Allows for the development of facilities within the surrounding communities. • Allows for the maintenance of existing facilities. • Temporary toilets could be provided, as necessary, at existing designated trailhead and parking sites located within the primary recreation use zones (Map 42 of the draft plan). • Construction of permanent toilets would only be considered within the Hyatt Lake Recreation Area.	• Allows continued maintenance of existing facilities. • Construction of new trailheads could be considered. • Temporary toiles could be located, as necessary, throughout the monument. • Construction of new toilets and drinking water sources could be considered within the primary recreation use zones (Map 42 of the draft plan).	• Allows for improvement and alteration of existing facilities. • Facilities could be developed in surrounding communities for use as visitor contact stations. • Maintenance of existing trailheads, toilet facilities, etc. would continue. • Toilets could be provided, as necessary, at designated trailheads and parking sites.
Interpretive Sites and Signs	• Continue use and maintenance of existing signs and interpretive sites for protection of monument objects and to provide travel information. • New interpretive sites could be developed consistent with the protection of monument objects. • New signs would be installed only for the protection of monument objects and public safety.	• Continue use and maintenance of existing signs and interpretive sites for travel, safety, resource protection, and visitor information. • No new interpretive sites would be developed. • New signs would be limited to those necessary for the protection of monument resources and public safety.	• New interpretive sites and/or signs could be developed, as needed, in the primary recreation use zones within the north management zone (Map 42 of the draft plan) for resource protection, travel information, educational purposes, and/or public safety. • No new interpretive sites would be developed in the south management zone (Map 4) and new signs would be installed only for resource protection, travel information, and/or public safety.	• Continued use and maintenance of all existing interpretive sites and signs on public land within the monument. • Alteration and improvements of existing sites and signs could occur throughout the monument, as necessary. • New sites and signs could be developed throughout the monument.	• New interpretive signs and/or sites could be developed, as needed, within the north management zone (Map 4) for resource protection, travel information, educational purposes, and/or public safety. • No new interpretive sites would be developed in the south management zone (Map 4) and new signs would be installed only for resource protection, travel information, and/or public safety.

Table 1-1. Comparison of Alternatives

	Alternative A Draft Plan/DEIS No Action	Alternative B Draft Plan/DEIS	Alternative C Draft Plan/DEIS Preferred	Alternative D Draft Plan/DEIS	Proposed Management Plan/FEIS
Valid Existing Rights	• Private landowners within the monument are assured reasonable access to their non-federally owned property that is surrounded by public land.				
Linear Rights-of-Way	• Allocation of lands to existing rights-of-way corridors would continue (Appendix P).				
	• Continue to make BLM-administered lands available for needed rights-of-way consistent with local comprehensive plans, Oregon statewide planning goals and rules, and protection of monument resources. • Subject to all VERs, exclude rights-of-way in the following areas: ⇨Research Natural Areas ⇨Wilderness Study Areas ⇨VRM Class I areas ⇨Known special status plant species sites • Subject to all VERs, avoid rights-of-way in the following areas: ⇨recreation sites ⇨sensitive species habitat ⇨VRM Class II areas ⇨known wetlands ⇨Jenny Creek LSR (now OGEA) • Rights-of-way should avoid adverse impacts that retard or prevent attainment of Aquatic Conservation Strategy (ACS) objectives. • Where legally possible, adjust existing rights-of-way to eliminate adverse effects that retard or prevent the attainment of the ACS. • If adjustments are not effective and where legally possible, eliminate the activity.	• No new authorizations for linear rights-of-way on public lands would be issued.	• Subject to all VERs, with the exception of buried lines within the prism of existing roads, avoid new rights-of-way in the monument. • Rights-of-way may be granted when no feasible alternate route or designated rights-of-way corridor is available, but every measure would be taken to minimize negative impacts to monument resources. • Rights-of-way should avoid adverse impacts that retard or prevent attainment of Aquatic Conservation Strategy (ACS) objectives. • Where legally possible, adjust existing rights-of-way to eliminate adverse effects that retard or prevent the attainment of the ACS. • If adjustments are not effective and where legally possible, eliminate the activity.	• Same as Alternative C.	• Continue to make BLM-administered lands available for needed rights-of-way consistent with local comprehensive plans, Oregon statewide planning goals and rules, and protection of monument resources. • Subject to all VERs, with the exception of buried lines within the prism of existing roads, new rights-of-way in the CSNM would be minimized. • Rights-of-way may be granted when no feasible alternate route or designated rights-of-way corridor is available, but every measure would be taken to minimize negative impacts to monument resources. • Rights-of-way should avoid adverse impacts that retard or prevent attainment of Aquatic Conservation Strategy (ACS) objectives. • In cases where existing rights-of-way are found to negatively impact monument resources, BLM will work with authorized holders to reduce those impacts where feasible. • Three existing corridors that serve utility, transportation, and communications industries are located within the monument. These corridors would take precedence for future facility development over non-designated areas. • Any applications for new facilities within a designated corridor would be thoroughly reviewed and analyzed for potential impacts to monument resources. • Current levels of maintenance, access, and other established uses consistent with previously identified objectives and VERs would continue.

Table 1-1. Comparison of Alternatives

	Alternative A Draft Plan/DEIS No Action	Alternative B Draft Plan/DEIS	Alternative C Draft Plan/DEIS Preferred	Alternative D Draft Plan/DEIS	Proposed Management Plan/FEIS
Valid Existing Rights (Continued)					
Withdrawals	• The current withdrawals in the monument are identified in Appendix P. The monument proclamation segregated all federal lands and interests in lands from all forms of entry, location, selection, sale, or leasing or other disposition under the public land laws, including but not limited to withdrawal from location, entry, and patent under the mining laws, and geothermal leasing, other than by exchange that furthers the protective purposes of the monument. All land withdrawals made prior to the monument designation will be reviewed on a case by case basis to determine whether or not they should be continued, modified, or revoked.				
Communication Sites	• Allocation of lands to existing communication sites would continue (Appendix P). • Continue to make BLM-administered lands available for new communication sites consistent with local comprehensive plans, Oregon statewide planning goals and rules, and protection of monument resources. • The access road to the Soda Mountain summit from the Soda Mountain Road (39-3E-32.3) would be maintained and repaired to reduce erosion and sedimentation. • Continue current levels of maintenance, access and other established uses consistent with the Medford District RMP and VERs.	• No new communication sites would be developed in the monument.			
		• Existing communication site authorizations on Soda Mountain and Chestnut Mountain would continue.			
		• No expansion of existing facilities or construction of new facilities at either of the two communication sites. • The access road to the Soda Mountain summit from the Soda Mountain Road (39-3E-32.3) would be maintained and repaired to reduce erosion and sedimentation. • Continue current levels of maintenance, access and other established uses consistent with VERs.	• No new facilities would be built at the existing communication sites. • Efforts to mitigate visual effects of the existing facilities would be undertaken. • The access road to the Soda Mountain would be maintained and repaired to reduce erosion and sedimentation and gated. • Continue current levels of maintenance, access and other established uses consistent with VERs.	• New facilities would be considered at existing communication sites. • Efforts to mitigate visual impacts of any authorized new facility would be implemented. • A comprehensive communication site management plan addressing site efficiency, visual resources, and impacts of new technology would be undertaken (dependent on funding).	• No new facilities would be built at the existing communication sites. • Modifications to existing individual facilities (i.e., buildings) could be made if the proposed use does not increase the size (footprint) of the current authorized development and there are no interference problems for the other authorized users. • The BLM plans to complete a communication site survey for the Soda Mountain site in 2005. • A comprehensive communication site management plan addressing site efficiency, visual resources, and impacts of new technology is planned for 2006 (dependent on funding). • The BLM could permit modifications, such as a new device, following the completion of a site specific management plan. • The Soda Mountain communication site access roads (40-3E-21.1, 40-3E-21.2) would be improved (rocked) to reduce erosion, maintained to BLM standards, and gated at the junction of 40-3E-21.1 and 40-3E-21.2.

Chapter 2
Proposed Managment Plan

CHAPTER 2
Proposed Management

INTRODUCTION

The presidential proclamation establishing the Cascade-Siskiyou National Monument (CSNM) on June 9, 2000, directed the Secretary of the Interior to prepare a management plan for the monument. The proclamation also directed that the monument be managed pursuant to applicable legal authorities. In accordance with these directives, the monument planning team followed the planning process described in Chapter 1. The Bureau of Land Management (BLM) published a Draft Resource Management Plan/Draft Environmental Impact Statement (DRMP/DEIS or draft plan) for the CSNM in June 2002.

As a result of multiple requests, the original 90-day public comment period was extended for an additional 90 days, closing on December 19, 2002. During that period, approximately 17,000 written comments were received on the proposed management outlined in the draft plan. All of these comments were carefully considered and analyzed by the planning team. The proposed plan, although primarily based on Alternative C in the draft plan, draws from each of the alternatives and incorporates modifications that reflect public comments and additional analysis.

Throughout the comments, the public consistently identified livestock grazing and fire hazard in the wildland-urban interface as two primary issues that needed to be more fully analyzed in this plan. The proposed management plan has been modified to reflect these concerns as described below.

Livestock Grazing

There are nine active grazing allotments across the CSNM. The presidential proclamation (Appendix A) directed the Secretary of the Interior to "study the impacts of livestock grazing on the objects of biological interest in the monument with specific attention to sustaining the natural ecosystem dynamics." The draft plan deferred most discussion, analysis, or decisions regarding livestock grazing in the CSNM until a livestock impact study (*Study of Livestock Impacts on the Objects of Biological Interest in the Monument)* could be completed. The livestock impact study is currently in progress. However, as noted in the public comments received by many individuals, organizations, and other governmental agencies, a comprehensive management plan is dependent upon the integration and analysis of livestock grazing management practices in coordination with other proposed management activities. The proposed plan has been modified to include a discussion of livestock grazing in the monument and the current and future management of livestock grazing under existing laws and regulations, including the direction found in the presidential proclamation.

Fire Hazard in the Wildland-Urban Interface

Although the draft plan identified high fire hazard on monument lands as a threat to monument resources, the draft plan did not specifically address the issue of fire hazard in relationship to the wildland-urban interface. Comments received in writing and during public meetings identified this issue as one that should be addressed in the proposed plan. Concerned individuals and organizations identified two primary concerns: (1) many of the fires that have occurred in past decades have started on private land, indicating a need to protect monument resources from this threat; and (2) conversely, the Greensprings has been identified as a "community at risk" from wildland fires that may start on public lands and spread to private. As a result, many landowners have received grants to conduct fuel hazard reduction activities on their property. Landowners have asked that the BLM take appropriate management actions to reinforce the fuel hazard reduction that has taken place on private land. The plan incorporates both of these concerns into proposed monument management. The Greensprings does not currently have a community protection plan. A community protection plan will be developed in cooperation with ODF and the community.

GENERAL MANAGEMENT DIRECTION

The CSNM was created to protect the ecological integrity of an area with outstanding biological diversity. The presidential proclamation, the Federal Land Policy and Management Act (FLPMA), and other governing laws and regulations provided general direction for the preparation of this resource management plan. FLPMA applies to all BLM-administered land and directs the BLM to manage public land on the basis of multiple-use and "in a manner that will protect the quality of scientific, scenic, historic, ecological, environmental, air and atmospheric, water resource, and archeological values." The proclamation also delineated a purpose for the monument that is more specific than those described for most other BLM-administered lands.

The presidential proclamation provides the principal management direction for the monument and identifies many specific species, plant communities and other objects of scientific and historic interest in this area. Although important individually, it is the interrelationship of these objects in the context of natural environmental processes that create this diverse ecosystem. Therefore, the guiding principle for management of the CSNM is to protect, maintain, restore or enhance relevant and important objects and natural processes. Within the context of this principle and other applicable laws, the following objectives helped shape the development of the proposed plan:

1. The proposed plan addresses the management of monument resources from a landscape perspective, recognizing the interdependence of individual native species, plant communities, and associated natural processes.
2. The proclamation directed that the monument remain open to certain specific uses under existing laws and regulations. These include valid existing rights, hunting, fishing, and pre-existing authorizations. To the extent consistent with existing rights, these uses would be managed in a manner that protects monument resources.
3. The proposed plan seeks to accommodate and carefully manage both recreation and visitation in ways that contribute to the understanding and protection of monument resources and natural ecosystem processes.
4. Monitoring and adaptive management would be key components of management activities in the monument to ensure that ecological objectives are being met at both a site-specific and landscape-level scale.
5. As monument management proceeds, the monument staff would continue to work with local, state and federal partners, scientists, Native American tribes, and the public to refine management practices that would ensure protection, facilitate scientific and historic research, respect authorized uses, and allow appropriate visitation.

MANAGEMENT ZONES AND AREAS

For planning purposes, the monument has been divided into the management zones and areas described below. These are referred to throughout the document with regard to proposed management decisions.

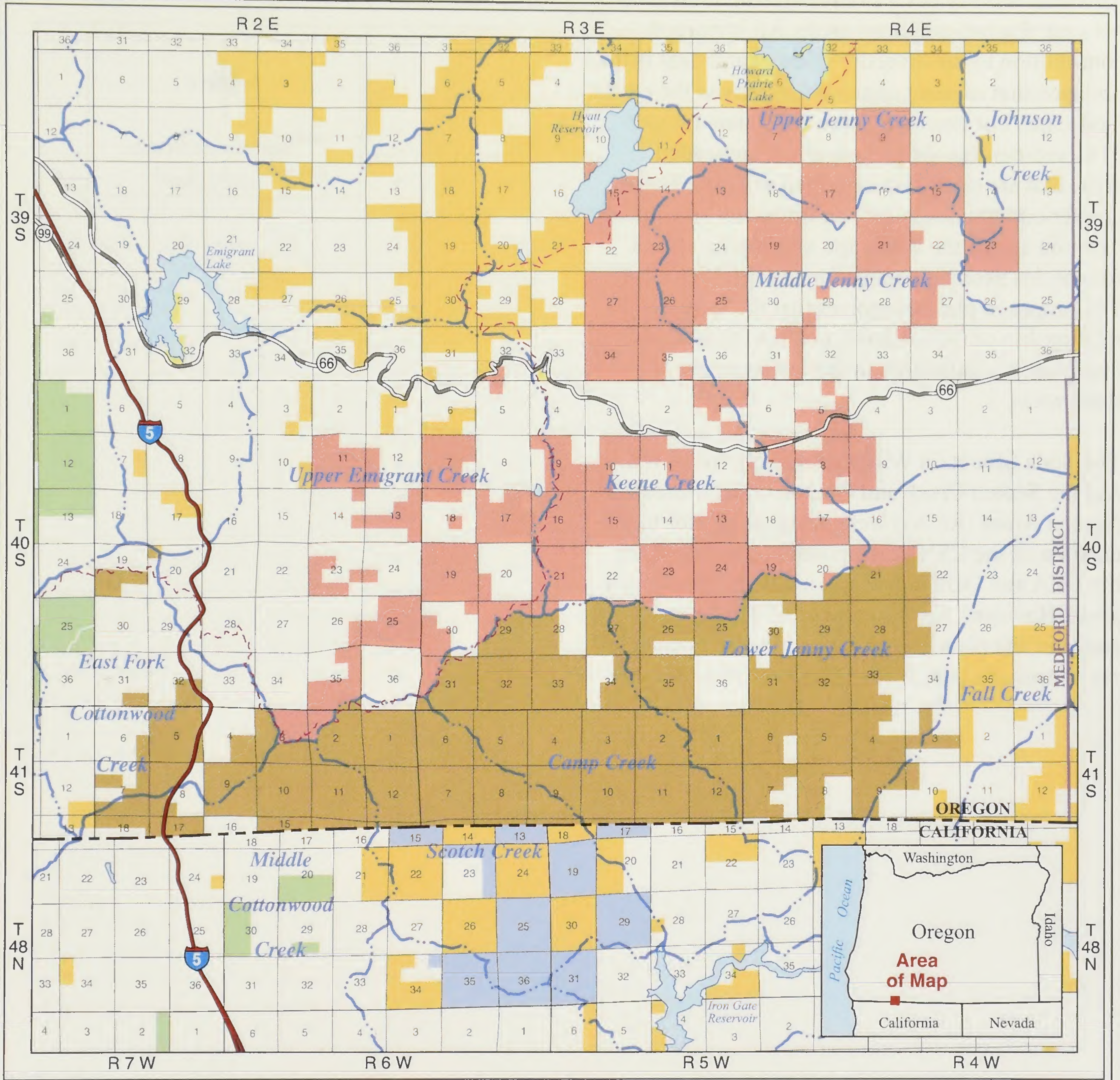
North and South Management Zones

The CSNM has been divided into two management zones that are used when describing proposed management activities that are not necessarily related to vegetation management (such as recreational activities and visitor facilities). An east-west oriented line separates the North Zone from the South Zone (Map 4). This line divides the Upper Emigrant Creek, Keene Creek, Middle Jenny Creek, Johnson Creek, and Upper Jenny Creek subwatersheds (North Zone) from the East Fork Cottonwood Creek, Middle Cottonwood Creek, Scotch Creek, Camp Creek, Fall Creek, and Lower Jenny Creek subwatersheds (South Zone). These zones are referred to during the identification of proposed management activities.

Plant Community Emphasis Areas

To better address the needs of individual species, plant communities, and ecosystem processes, the monument has been grouped into two "emphasis areas" (Map 5). The grasslands, shrublands, woodlands, semi-wet meadows and wet meadows make up the "Diversity Emphasis Area (DEA)" while the mixed conifer and white fir plant communities make up the "Old-Growth Emphasis Area (OGEA)."

Map 4: Cascade-Siskiyou National Monument Management Zones and Level 6 Subwatersheds



LEGEND

- Level 6 Subwatershed Boundary
- Pacific Crest Trail
- BLM District Boundary

BLM Administered Land

🟥 Cascade-Siskiyou National Monument North Zone

🟫 Cascade-Siskiyou National Monument South Zone

🟨 Other

Other Administered Land

🟩 Forest Service

🟨 Bureau of Reclamation

🟦 State

⬜ Private or Other

N
W E
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1 0 1 2 Miles

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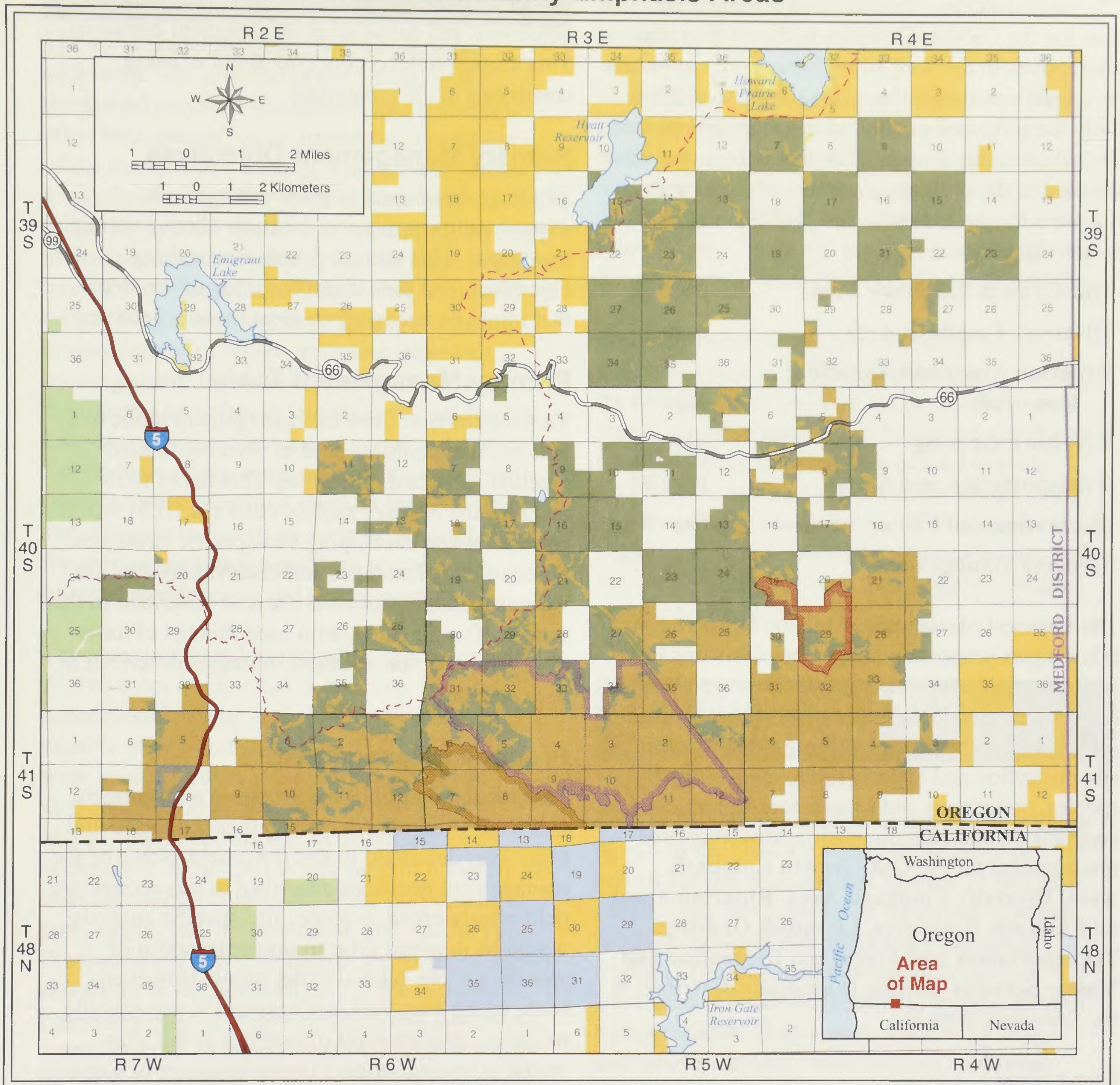
Although DEA plant communities are primarily found in the south and OGEA communities in the north, there is not a strict north-south division between the two emphasis areas. An important contribution to the diversity of the monument is the juxtaposition of plant communities across the entire landscape. For example, there are isolated stands of mixed-conifer old-growth forest embedded areas that are otherwise classified as DEA. These conifer communities serve an important ecological function across the landscape as stepping stones for species needing conifer forest for dispersal. The proposed plan recognizes that the spatial relationship of OGEA lands to DEA lands is an important consideration in the management of these areas.

The Soda Mountain Wilderness Study Area (WSA) and the Scotch Creek and Oregon Gulch Research Natural Areas (RNAs) were designated prior to the creation of the CSNM; proposed management for the DEA and OGEA does not include these special areas. However, for the purpose of landscape analysis, the plant communities in these three areas are considered part of the DEA or OGEA (Map 5).

Map 5: Cascade-Siskiyou National Monument Plant Community Emphasis Areas



LEGEND

▨ Cascade-Siskiyou National Monument Diversity Emphasis Area

▨ Cascade-Siskiyou National Monument Old-Growth Emphasis Area

▭ Mariposa Botanical Area

▭ Oregon Gulch RNA

▭ Scotch Creek RNA

▭ Soda Mountain WSA

- - - - Pacific Crest Trail

—— BLM District Boundary

Administered Land

▨ Bureau of Land Management

▨ Forest Service

▨ Bureau of Reclamation

▨ State

▭ Private or Other

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How to Read Chapter 2

Chapter 2 describes the proposed management plan for the CSNM. This plan is drawn from the alternatives in the draft plan (Table 1-1), comments received from the public, and additional analysis. Only the proposed monument management plan is described in this chapter. The alternatives that were detailed in the draft are summarized in Table 1-1, but are not repeated here. The plan focuses on the following subjects:

Old-Growth Emphasis Area page 37
Diversity Emphasis Area page 55
Riparian Areas and Aquatic Resources page 64
Livestock Grazing page 71
Transportation and Access page 84
Recreation and Visitor Services page 98
General Management page 109

The **General Management** section at the end of this chapter proposes management decisions for a wide range of issues, most of which were identified as "common to all alternatives" in the draft plan. These include decisions on archaeological site protection and historic trails, special status species, collections and special forest products, fire suppression and communication sites. Proposed management for the **Old-Growth Emphasis Area, Diversity Emphasis Area, Riparian Areas and Aquatic Resources, Livestock Grazing, Transportation and Access** and **Recreation and Visitor Services** sections is generally described in the following format:

Overview

The overview provides the reader with a brief introduction to the subject. Much of this information is taken directly from Chapter 2 – Affected Environment in the draft plan. The introduction provides basic information and sets the stage for a brief discussion of management concerns.

Primary Management Concerns

In this section, primary management concerns for each subject are described briefly. The listing of management concerns is not intended to be exhaustive; rather, it is intended to provide the reader with insight into some of the primary issues that influenced the development of management objectives and subsequent management decisions. This section reflects concerns about existing conditions in the monument.

Primary Management Objectives

The team developed primary management objectives in response to concerns about existing conditions. This section details overarching objectives, and then identifies some of the steps that might be necessary to meet those objectives.

Primary Management Tools

This section describes the management tools, or options, that could be used in working toward meeting identified objectives. This list of tools includes the primary methods that the BLM would consider when developing site-specific strategies. Some of the advantages and disadvantages of the various management tools are also described in this section. The planning team used this list of tools to develop the management strategies described in each section.

Proposed Management

This section describes the proposed management that would address the management concerns and objectives described in this document. Some of the management decisions described in this section are deliberately broad in scope; site-specific analysis would be required prior to implementation of specific actions related to decisions. However, some of the proposed management is site-specific in nature, and the level of analysis in this plan would allow subsequent implementation of certain projects. All projects would be consistent with the conservation measures for endangered species described in Appendix D.

Implementation Considerations

Although many decisions are proposed in this plan, site-specific implementation of most decisions would require additional analysis. This section details some of the issues that would be considered when planning management activities; these considerations would also be used to help make future management decisions that are in accordance with the objectives described in this plan.

Old-Growth Emphasis Area

OVERVIEW

The presidential proclamation specifically addressed "old-growth habitat crucial to the threatened northern spotted owl and numerous other bird species" as an important component of the monument's ecology. Old-growth forests are generally over 180 years old and have the following special characteristics: a multi-layered, multi-species canopy dominated by large overstory trees; a high incidence of large trees, some with broken tops; numerous large snags; and heavy accumulations of wood, including large logs on the ground. In addition to old growth, this document also refers to late-successional forests. Late-successional forests are considered mature forests that exhibit some or all of the old-growth characteristics identified above. Late-successional and old-growth forests provide important habitat for species such as the northern spotted owl, pileated woodpecker, and pygmy nuthatch.

The planning team has identified approximately 25,340 acres of land that is currently late-successional habitat and old-growth forest, or capable of becoming so (Map 5). These lands were identified during the planning process as the Old-Growth Emphasis Area (OGEA). Mixed conifer forests are the dominant forest community in the OGEA and support a variety of trees including Douglas-fir, white fir, ponderosa pine, sugar pine, incense cedar, and Pacific yew. Predominately white fir forests are found at higher elevations in the northern part of the monument. Late-successional or old-growth stand conditions currently exist on approximately 12,820 acres in the OGEA. Of these, approximately 4,000 acres have never been entered for timber harvest.

Adding to the monument's diversity, pine stands are found on the flat and lower hills east of Lincoln, reflecting forested communities of the Southern Cascade Slopes ecoregion (Map 3). These pine-dominated stands are important to species such as white-headed woodpecker, pygmy nuthatch, black-backed woodpecker, and flammulated owl. In some of these stands, a mixed white fir and Douglas-fir understory has developed in the absence of fire. Mixed conifer stands on the eastern portion of the monument exhibit a drier pine-dominated forest when compared to mixed conifer stands in the western portion of the monument.

Mature forests in the monument provide a key connectivity link between other areas of late-successional forest in the Oregon Cascades, northern California Cascades, and the Siskiyou Mountains. The OGEA is located at one of two connectivity "hotspots" in Oregon as identified in the Northwest Forest Plan (USDA/USDI 1994b).

South of Keene Ridge, mixed conifer forests generally occur in isolated stands as opposed to the more contiguous stands in the north. These stands are often surrounded by the grassland and shrubland plant communities of the Diversity Emphasis Area (DEA). The conifer stands south of Keene Ridge are distinctive biologically diverse islands and unique isolated communities that reflect the discontinuity between the southern Cascades and the Sierra Nevada.

PRIMARY MANAGEMENT CONCERNS IN THE OGEA

Habitat Fragmentation

Loss of habitat connectivity is one of the primary threats to the OGEA's ability to function as habitat for late-successional species. In this case, connectivity is a measure of the extent to which habitat conditions can provide for breeding, feeding, dispersal, and movement of species associated with late-successional and old-growth habitat. Habitat fragmentation resulting from past timber harvests, road building, and other activities has limited connectivity by creating gaps in the mature forest larger than some wildlife species can successfully cross without being subject to predation or other mortality factors. Various levels of timber harvest have taken place on approximately 83 percent of the OGEA. Regeneration harvests resulting in young, even-aged pine plantations have taken place across six percent of the OGEA.

Fire Exclusion

Effective fire suppression efforts over the past 100 years have significantly influenced mixed conifer and pine forests in the OGEA by removing fire as a natural ecosystem process. The exclusion of fire from the ecosystem has caused changes in forest structure, tree size, and habitat for different species. The loss of fire as a natural process has also resulted in a shift toward dense stands of white fir and Douglas-fir at the expense of sugar pine, ponderosa pine, and incense cedar. Tree growth rates have slowed, and the understory composition of forest stands has shifted to predominantly white fir. Levels of root rot and insect infestation (Maps 6 and 7) are higher as a result of species shifts and increased tree densities.

In addition to altering the historic structure of forest stands, fire exclusion has created conditions that support higher fire intensities than would have been common historically. Excessive ground and ladder fuels have increased the potential for stand replacement events. For example, observed fire behavior in the monument indicates high rates of tree mortality, including large, mature trees. Appendix E describes a process for assessing how current conditions may affect the severity, intensity, and frequency of fires burning in the ecosystem as compared to historic conditions.

Wildland-Urban Interface (WUI)

The OGEA is adjacent to several thousand acres of private land in the Greensprings community. As part of the National Fire Plan, the Oregon Department of Forestry has identified the Greensprings as a "community at risk" for a wildland fire spreading from public to private lands. Likewise, resources in the monument are also at risk from fires that originate on private land. Fire history data over the past 37 years (Appendix E) indicates that the likelihood of a fire originating on private lands is higher (3.32 fires/1,000 acres) than on public lands (2.70 fires/1,000 acres). Lightning is the primary cause of fire ignitions on public land (64 percent) while human-caused starts are the primary source of fire ignition on private lands (59 percent). There are approximately twice as many human-caused fires per acre on private lands as there are on public lands.

Road Density

There are approximately 163 miles of roads in the OGEA, resulting in a road density that averages 4.12 miles per square mile. A high road density decreases the quality of late-successional habitat by impairing hydrologic function, creating ecological edges, reducing snags, and reducing mobility across the landscape for some species; furthermore, it can increase the risk of human-caused fire starts. Roads also facilitate access into forested areas by livestock, weed species, and non-native wildlife such as opossums.

Noxious Weeds

Noxious weeds and other non-native species are also a management concern. Canada thistle, yellow starthistle, and medusahead are the most common noxious weeds in the OGEA. Bulbous bluegrass, a non-native species, has established a strong foothold in all plant communities throughout the monument. Knapweeds show potential for spreading within the OGEA, but have so far been restricted to a few roadside populations that have been treated with herbicides.

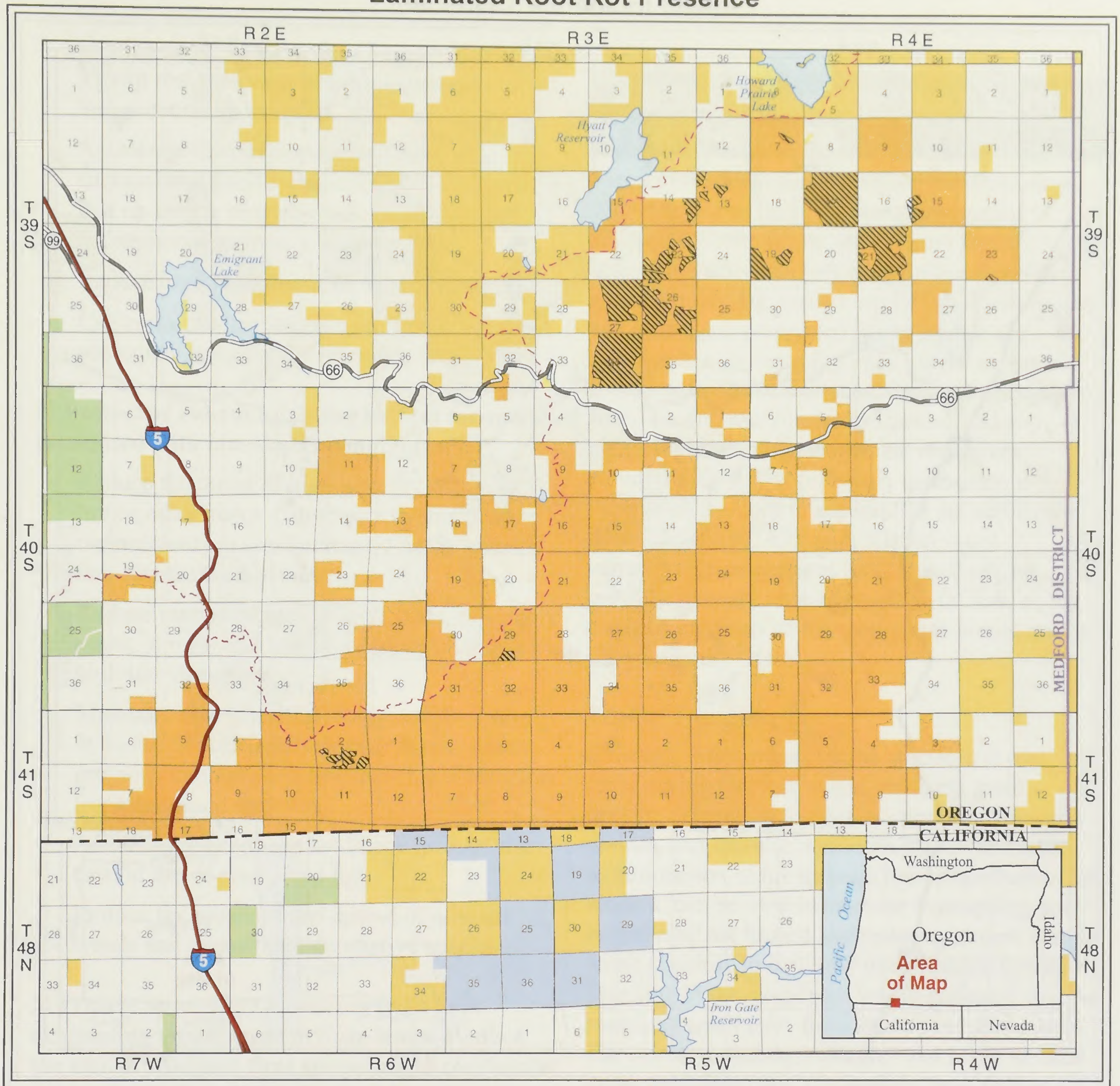
Riparian Areas and Aquatic Connectivity

Past management activities such as timber harvest and road building have impacted riparian areas and limited aquatic connectivity in the OGEA. Past harvest activities have reduced shade and removed large wood from riparian areas. The checkerboard land ownership of the monument also contributes to the fragmented condition of the aquatic landscape. Management concerns regarding riparian areas and aquatic connectivity cross the "boundaries" of the OGEA need to be analyzed on a monument-wide scale. Additional discussion and proposed management direction can be found in the **Riparian Areas and Aquatic Resources** section of this chapter.

PRIMARY MANAGEMENT OBJECTIVES FOR THE OGEA

The main goal of OGEA management would be to maintain, protect, and restore historic conditions of late-successional and old-growth forest ecosystems in order to promote habitat and enhance connectivity for old-growth associated species. To achieve that goal, the proposed management described in this plan and future projects in the OGEA would strive to meet the following primary objectives:

Map 6: Cascade-Siskiyou National Monument Laminated Root Rot Presence



LEGEND

▨ Root Rot Presence

- - - - Pacific Crest Trail

— BLM District Boundary

BLM Administered Land

🟧 Cascade-Siskiyou National Monument

🟨 Other

Other Administered Land

🟩 Forest Service

🟨 Bureau of Reclamation

🟦 State

⬜ Private or Other

1 0 1 2 Miles

1 0 1 2 Kilometers

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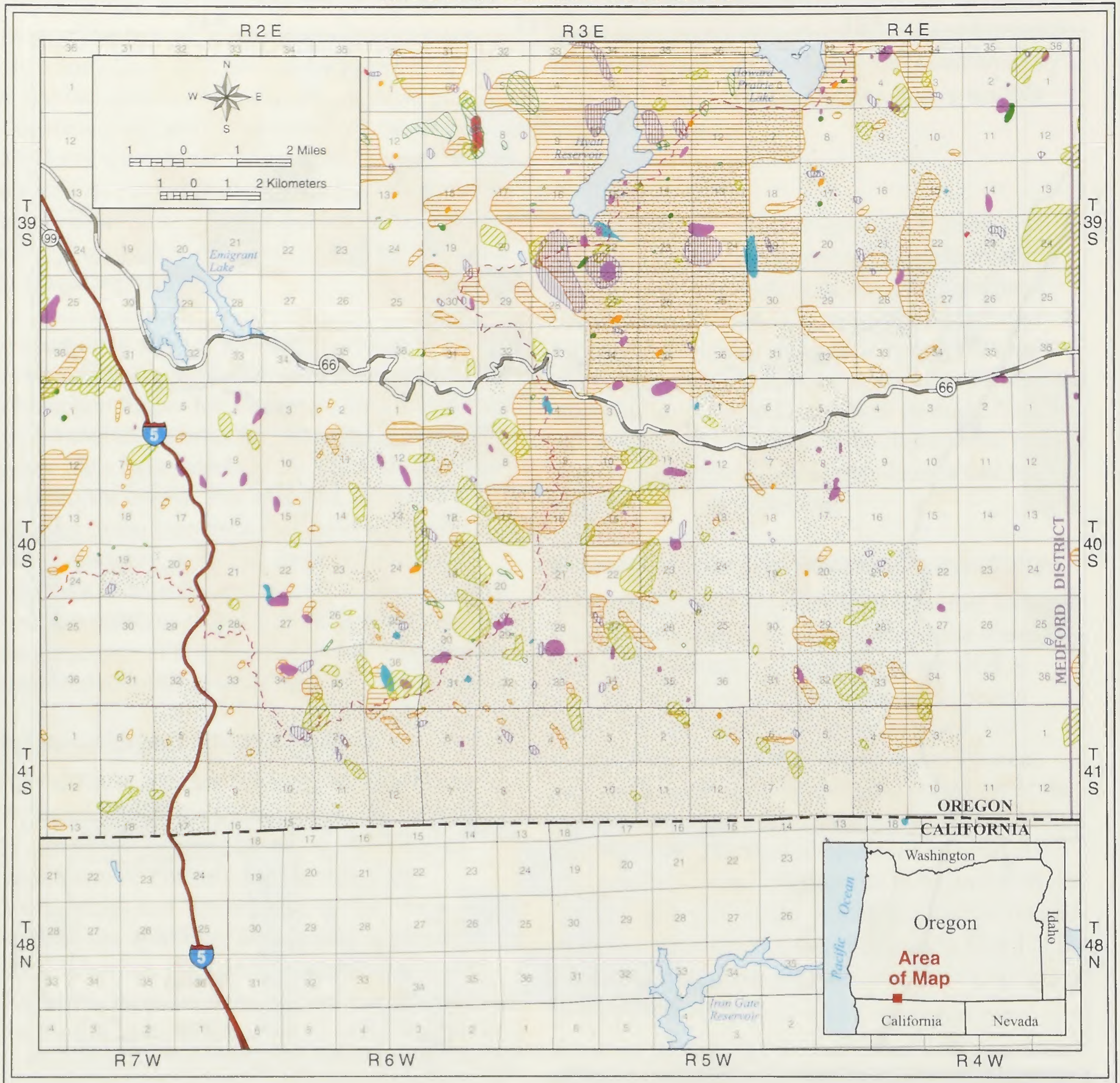
Map 7: Cascade-Siskiyou National Monument
Insect Incidence 1995-2003



LEGEND

- ▤ Mortality 1995
- ▥ Mortality 1996
- ▨ Mortality 1997
- 🟥 Mortality 1998
- 🟧 Mortality 1999
- 🟩 Mortality 2000
- 🟦 Mortality 2001
- 🟪 Mortality 2002
- ▨ Mortality 2003
- - - - - - Pacific Crest Trail
- ——— BLM District Boundary
- ░ Cascade-Siskiyou National Moument

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1) Enhance local and regional connectivity for species associated with late-successional forests.

- Identify areas where past disturbances (such as logging or fire) have reduced canopy closure to a point that no longer provides connectivity for late-successional species.
- Accelerate the development of late-successional habitat characteristics in stands that no longer provide connectivity for late-successional species, where feasible.
- Reduce high road densities where possible.
- Use areas of intact old-growth forest with high ecological integrity for reference conditions.

2) Protect or enhance existing habitat for species associated with late-successional forests.

- Reduce the threat of high-severity wildland fire or other major disturbance events (stand replacement) to areas currently functioning as late-successional habitat.
- Reduce mortality rates of large trees, especially pines, in mid- and late-successional stands with high tree densities.
- Maintain intact, healthy old-growth structure in forests. Focus treatments on stands where previous interventions or events have adversely impacted stand structure.
- Reintroduce fire to the landscape through the careful use of prescribed fire.
- Reduce the presence and spread of noxious weeds and undesirable non-native species.

3) Protect monument resources from fires originating on adjacent private lands. Reduce the risk of wildland fires spreading to residential properties in the wildland-urban interface.

- Identify the wildland-urban interface associated with the Greensprings, a community identified by the Oregon Department of Forestry as being "at risk" for wildland fires.
- Provide adjacent landowners with assistance in obtaining grants for fire hazard reduction activities on their lands.
- Where possible, reinforce fire hazard reduction activities on private lands by reducing fire hazard on adjoining monument lands.
- Work with landowners to remove hazardous fuels (following site-specific criteria) on monument lands adjacent to private property to accommodate a 120-foot defensible space around existing private homes.

PRIMARY MANAGEMENT TOOLS FOR THE OGEA

Many of the management objectives listed above can be achieved using similar management strategies. For example, the primary forest restoration activities proposed for the monument involve removing smaller trees from dense forests and then using prescribed fire to imitate the role that low-severity fire once played in these ecosystems. These activities, designed to restore forest health, also reduce fire hazard, thereby achieving multiple management objectives simultaneously. The following management tools could be used to accomplish the objectives described above. Although this list is not exhaustive, management tools that would not meet the primary objectives of the OGEA, or the overarching goals of the monument, would not be allowed in the OGEA.

Forest Thinning

Thinning forest stands can be an effective tool for restoring forest structure, reducing stand density, decreasing fire hazard, promoting desired species, and can also serve as a precursor to the reintroduction of fire through prescribed burns. Tree removal can be used to meet the overlapping goals of reducing fire hazard and restoring a more natural forest structure to currently overcrowded forests. Thinning in the monument would generally involve removing small trees from densely stocked stands. The primary thinning strategies that could be used in the monument are: (1) thinning from below; (2) density management; and (3) pine release.

1. The removal of understory trees is called **thinning from below**. Thinning from below would be used to remove some of the slow-growing trees that have resulted from fire exclusion and are now competing with larger, established trees for sunlight, nutrients, and water. This treatment also removes a portion of the brush component of forested stands and reduces future risk of stand-replacing fires.
2. **Density management** also takes into consideration stand structure, and involves removing understory and overstory trees in

Service Contracts, Timber Sales, and Stewardship Contracts

Some of the primary mechanisms for accomplishing restoration projects in the OGEA are service contracts, stewardship contracts, and in some cases, commercial timber sales.

Service Contracts

Service contracts are contracts for services, such as thinning small diameter trees to accomplish forest restoration goals. Since there is no commercial value derived from the trees or brush removed, the BLM pays with appropriated dollars for the entire cost of restoration services. The primary goal of these contracts is to acquire services that result in ecological restoration.

Timber Sales

In some cases, projects may involve thinning trees with commercial value. Advances in technology and improved capabilities at sawmills have greatly decreased the size of trees that have commercial value. Commercial treatments would only be authorized as part of a "science-based ecological restoration project aimed at meeting protection and old-growth enhancement objectives" as specified in the CSNM proclamation (Appendix A). Under these circumstances, a timber sale could be authorized to accomplish old-growth enhancement objectives.

Stewardship Contracts

Stewardship contracts would allow for the involvement of local communities in the development of projects in the OGEA. Stewardship contracting does not replace either timber sale contracts or service contracts; it is a way to combine elements of these contracts in new ways that make it easier to meet ecological objectives in a more efficient and collaborative manner. Stewardship involves caring for public lands through broad-based public and community involvement. Stewardship contracts are contracts for ecological restoration services in which some of the costs may be offset by the value of vegetative material removed. The value of the material removed would help pay for services while engaging local communities in projects that benefit monument lands. Stewardship contracts must comply with all environmental and land-use plan laws, including the intent of the presidential proclamation with regard to commercial timber harvest.

order to reduce stand density. In the monument, density management could be used to help create more natural spacing in even-aged pine plantations or other densely stocked stands.

3. In some stands, thinning may be used to create gaps around mature pine trees that are being crowded by vegetation that has developed as a result of fire exclusion. These **pine release** treatments would be designed to remove competing vegetation from around existing pine trees and to provide opportunities for pine regeneration.

Large trees (relative to stand composition and average tree size) would not be cut except for the purpose of creating openings, providing habitat structure, or eliminating hazard. Where larger trees are cut, they would usually be left in place to contribute toward coarse woody debris or down wood needs.

Thinning, in most cases, would replace fire as the mechanism for reducing the density of forest stands. Although thinning is designed to remove trees that have resulted from fire exclusion, thinning alone cannot mimic all of the ecological benefits attributed to low-severity wildland fire and is often followed by prescribed fire. Thinning prepares the stand so that prescribed fire can achieve the desired results (low-severity burn).

Prescribed Fire

Prescribed burning is a complex tool that can be used to accomplish well-defined resource management objectives such as the restoration and maintenance of biological diversity, forest regeneration, forage production for wildlife, and

McKelvie Habitat Types

Northern Spotted Owl Habitat Types and Forest Condition

Wildlife biologists classify the condition of forests based on their potential use by northern spotted owls. As the northern spotted owl is closely associated with late-successional forests, biologists assume that most habitat suitable for northern spotted owls is also suitable for most other late-successional species. Every acre of the CSNM was placed into one of six habitat categories. This classification system is used throughout the proposed plan to describe vegetative conditions and potential management activities. The OGEA is comprised of Habitat Types 1, 2, 3, and 5. The remaining two habitat types (4 & 6) are considered part of the Diversity Emphasis Area and would be managed accordingly.

Habitat Type 1: Nesting (approximately 3,426 acres)
Nesting habitat meets all spotted owl life requirements. These forests have a high canopy closure (greater than 60 percent), a multi-layered structure, and large overstory trees. Deformed, diseased, and broken-top trees, as well as large snags and down logs are also present.

Habitat Type 2: Roosting/Foraging (approximately 9,392 acres)
Habitat Type 2 is not suitable for nesting, but provides spotted owls with roosting, foraging and dispersal habitat. Canopy closure is usually greater than 60 percent but with a more uniform structure. Habitat Type 2 has moderately sized overstory trees. Deformed trees, snags and down wood are less prevalent than in Habitat Type 1.

Habitat Type 3: Potential Habitat (approximately 3,865 acres)
Habitat Type 3 does not presently meet spotted owl needs. Past disturbances such as logging or fire have reduced canopy closure and other important late-successional features. Stand density is high with up to 1,500 small trees per acre. Due to overcrowding, trees in these stands may not develop into late-successional habitat in the near future without density reduction. These areas have the potential to grow into Type 1 or 2 habitat if given enough time and appropriate management.

Habitat Type 4: No Potential (approximately 26,218 acres)
Primarily found in the southern portion of the monument, these sites do not have the potential of developing into late-successional forest or supporting old-growth dependent species. Examples include chaparral, natural meadows, rocky open areas and oak woodlands. (For planning purposes, the BLM classified this habitat type as the Diversity Emphasis Area.) This habitat type provides suitable habitat for a wide range of species.

Habitat Type 5: Dispersal with Potential (approximately 8,654 acres)
Habitat Type 5 is not suitable for spotted owl nesting, but is thought to be important for travel between old-growth stands due to a canopy closure greater than 40 percent. Many of these stands are growing at a higher density than stands that historically developed into late-successional habitat. These stands are at risk of wildland fire due to excessive levels of live and dead fuels. Habitat Type 5 has the potential to grow into Type 1 or 2 habitat if given enough time and appropriate management.

Habitat Type 6: Dispersal with No Potential (approximately 1,392 acres)
This habitat type currently provides structure believed to be important for spotted owl dispersal. However, due to soil types and precipitation rates, these stands are not likely to provide the late-successional conditions required by spotted owls for reproduction. (For planning purposes, the BLM classified this habitat type as the Diversity Emphasis Area.)

fire hazard reduction. In many cases, fire cannot safely and effectively be reintroduced to the landscape without prior treatments to thin small trees or remove excessive brush and understory fuels. Without prior treatment, the energy release from prescribed fire as the initial treatment would exceed desired intensity levels and have undesirable effects on vegetation and soil.

Prescribed burning in the OGEA would include handpile burning and underburning. Handpile burning is utilized in areas that have been manually thinned, with brush and understory trees grouped in small piles. This type of burning takes place in the late fall and winter after a significant amount of rainfall has occurred. Underburning utilizes a low-intensity surface fire to reduce surface vegetation and some small trees. Underburning is conducted during weather conditions (usually late winter and spring) in which moisture levels allow for low-intensity fire.

Although forests in the monument evolved with fire as a natural ecosystem process, reintroducing fire to the landscape presents numerous challenges. One of the most significant of these is the proximity of private land to monument lands and the need to ensure that prescribed fire remains on public lands. For this reason, prescribed burning generally takes place when the environment is less dry and fire behavior is easier to predict and control. Some vegetation types such as higher-elevation white fir stands are not conducive to prescribed burning as these sites did not evolve with frequent fire. More information on prescribed burning is available in Appendix F.

Road Closures

Road closures can reduce habitat fragmentation and increase connectivity. An analysis of the transportation system identifies areas of high road densities and areas where road closures should be considered (see **Transportation and Access** section).

Noxious Weed Treatments

Noxious weed treatments would be an important component of OGEA management. The tools that could be used to treat noxious weeds are described in Appendix G.

TREATMENT PRIORITIES IN THE OGEA

The planning team used a combination of the management concerns and objectives described above in order to determine the most appropriate places on the landscape for initial management activities. The following five areas of concern were identified and then mapped by the planning team. Maps for this section begin on page 49.

Reduced Forest Habitat Connectivity (Map 8)

The planning team identified an area near Lincoln Creek and Pinehurst that is not currently providing suitable habitat connectivity for late-successional species due to past disturbances, such as logging or fire. The team delineated the area using vegetation types, past management history, and the land ownership pattern. The mapped area has a relatively high number of young forest stands due, in part, to previous forest management. The public land in this area lacks continuity, as it is interspersed with a relatively large amount of private land. The checkerboard pattern of public and private land increases the need for areas of strong habitat connectivity on public land. Management activities in these areas could help expedite the development of late-successional habitat structure in the previously managed stands.

Young Stands (Map 9)

Map 9 identifies young forest stands (generally 10-30 years old) in the OGEA that do not currently meet any known spotted owl requirements, but have the potential to become habitat for spotted owls and other late-successional species (Habitat Type 3). Past disturbances such as logging and wildland fire have reduced canopy closure and other important late-successional features. Almost all of these stands are unmanaged tree plantations that resulted from past clearcuts. Trees in these stands are not developing under the same conditions that historically resulted in old-growth structure and characteristics. These stands may not develop into late-successional habitat without appropriate management.

Pine Forest Communities and Mixed Conifer with a Pine Component (Map 10)

Map 10 displays portions of the OGEA that have lands with mature ponderosa and sugar pine identified as a component of the potential natural vegetation (Soil Survey of Jackson County Area, USDA, 1993). In the pine forests primarily located in Eastern Cascade Slopes Ecoregion (Map 3), younger pine trees and Douglas-fir trees are competing with mature pine trees. In mixed conifer stands located in the remainder of the monument, Douglas-fir and white fir are now competing with ponderosa and sugar pine for water and nutrients. Without some type of management intervention, the old-growth pine component of these stands may be lost.

High Fire Hazard within ¼ Mile of Old-Growth/Late-Successional Habitat (Map 11)

Map 11 identifies stands with a high fire hazard rating (Appendix E) within ¼ mile of late-successional and old-growth habitat (Habitat Types 1 & 2). The existing conditions of these stands are conducive to high-intensity fire. In the event of a wildland fire, these stands may pose a risk to nearby old-growth stands as the fire spreads. Some of the mapped areas are in the Diversity Emphasis Area (DEA). Stands in the DEA have a different set of management objectives than those in the OGEA. These areas would not be treated indiscriminately to reduce fire hazard simply because of their proximity to the OGEA. Any treatments in the DEA would take place in coordination with the objectives and management considerations for the DEA described later in this chapter.

Wildland-Urban Interface (WUI) (Map 12)

The National Fire Plan provides for the identification of "communities at risk" for wildland fire, and the Greensprings is defined as such a community by the Oregon Department of Forestry (ODF). The planning team has since worked with the ODF to identify public lands in the Greensprings wildland-urban interface that pose a fire risk to landowners in this area. Map 12 identifies lands in the wildland-urban interface.

PRIORITY AREAS
(Map 13)

The five areas of concern described above were combined in a composite map (Map 13). Color values reflect the number of times a particular area was identified as one of the areas of concern described above (Maps 8-12). Under the proposed management plan, areas that have multiple management concerns would become priorities for additional analysis and potential future management activities. No areas exhibited all five management concerns.

The planning team then considered the following questions in order to determine where treatments should take place.

1. Which geographical areas in the OGEA have the highest concentration of overlapping management concerns?

An analysis of Map 13 indicates that geographical areas with the highest priority for site-specific analysis and initial treatments within the OGEA are the following:

- the wildland-urban interface (WUI) (Map 12); and
- the area of reduced forest habitat connectivity (Map 8).

2. Within these geographical areas, what types of forest habitat (as related to the needs of late-successional species) are currently present and should be managed?

The areas identified as priorities for treatment were further categorized using the previously described McKelvie habitat typing system. Proposed decisions regarding how many acres to treat in the WUI and Connectivity Area are also based on the types of habitat found in each area (Table 2-1).

Habitat Types 1 & 2

Habitat Types 1 & 2 identify areas comprised of functional late-successional and old-growth habitat. Habitat Type 1 provides the highest quality of old-growth habitat found in the monument. Although there are management concerns associated with these stands, they are not a priority for treatment. Habitat Type 1 & Type 2 stands would be used for reference conditions to the extent possible. Management activities are not currently planned in Habitat Type 1 stands. Limited pilot projects could take place in Habitat Type 2 stands located in the

Table 2-1. Acres Identified as Priorities for Treatment by Habitat Type*

Geographical Area	Habitat Type (Acres)				
	Type 1 (old-growth)	Type 2 (mature)	Type 3 (young)	Type 5 (dispersal)	Total Acres
1. WUI	70	410	70	460	1,010
2. Connectivity Area	510	840	1,410	3,640	6,400
TOTAL	580	1,250	1,480	4,100	7,410

*Acres are rounded

WUI. Additional treatments would only take place in Habitat Type 1 & 2 stands if immediate and critical needs are identified through the adaptive management strategy described in Appendix C.

Habitat Type 3

Habitat Type 3 stands in these areas are comprised of young trees that were planted after clearcuts in the 1970s. Habitat Type 3 stands do not currently provide benefits to late-successional species. Treatments designed to facilitate the development of late-successional characteristics would be allowed throughout Habitat Type 3 stands.

Habitat Type 5

The diversity and complexity of Habitat Type 5 stands exceeds that of Habitat Type 3 stands. As these stands currently provide ecological benefits to some late-successional species, management activities would be designed to ensure that existing functions are not lost in an effort to improve long-term habitat conditions.

3. Are there any other high-priority areas for treatments?

Young stands (Habitat Type 3) are a concern throughout the monument (Map 9). These stands are not currently providing habitat for late-successional species as they are primarily comprised of even-aged pine trees that were planted following clearcuts. Currently, many of these stands are on developmental paths that may not provide adequate or desirable structural late-successional and old-growth characteristics. Treatments in these stands may help accelerate the development of mature forest habitat throughout the monument.

PROPOSED MANAGEMENT IN THE OGEA

Based on the geographical areas identified as high priorities for treatment and the habitat types found in these areas, the following treatments are proposed for the OGEA.

1. Proposed Treatments in the Wildland-Urban Interface (WUI)

Proposed management would be for initial treatments to take place within or adjacent to the WUI (Map12) in Type 3 (young) and Type 5 (dispersal) stands. Management activities would be designed to restore ecological integrity and to lower fire hazard in these habitat types through thinning and prescribed burning. Up to 70 acres (100 percent) of Habitat Type 3 and up to 460 acres (100 percent) of Habitat Type 5 could be treated during initial management activities (Table 2-2).

Many of the management concerns identified in this section apply to Habitat Type 2 stands. Habitat Type 2 stands provide roosting and foraging habitat for spotted owls, but do not provide the higher-quality nesting habitat found in Type 1 stands. Pilot projects could be developed and implemented in Habitat Type 2 stands in the WUI. Pilot projects in Habitat Type 2 would require the collection of baseline pretreatment data and development of an effectiveness-monitoring plan. A maximum of 200 acres (49 percent) of Habitat Type 2 in the WUI could be treated through pilot projects.

All treatments in Habitat Type 2 and Type 5 would likely include pile burning and then subsequent underburning. Habitat Type 3 would be burned selectively as some young trees could not withstand any significant level of prescribed fire.

In order to help private property owners protect their homes from wildland fire, prior written authorization could be given to homeowners to create a defensible space around their homes. In accordance with recommendations by Cohen et al. (1998), private property owners with an existing structure could be permitted to remove dead and live vegetation less than six inches in diameter at breast height (4.5 feet) on monument lands that are within 120 feet of their structure. Removal of this vegetation would be done manually (chain saws and hand tools) and only with prior written authorization from the BLM. Landowners outside of the WUI with structures adjacent to monument lands could be given the same consideration. There are approximately 10 structures within 120 feet of monument lands. Vegetation removal could take place on an estimated 10 acres of monument lands under this provision.

Some of the areas identified as high priorities for treatment within the WUI are associated with the plant communities included in the DEA. These areas would be considered for management activities as described in the proposed management for the DEA.

The boundary of the wildland-urban interface is not static and could change through the monument's adaptive management process (Appendix C) if additional analysis identifies areas that should be categorized in this manner. Future decisions that could modify the WUI boundary would have to balance the need to reduce fire hazard in areas adjacent to private property with the monument management objectives.

2. Proposed Treatments in the Connectivity Area

Subsequent management activities in the OGEA would be designed to enhance ecological integrity in Habitat Type 3 (young) and Type 5 (dispersal) stands that are located within the area of reduced habitat connectivity (Map 8) through thinning and subsequent prescribed burning. Approximately 1,410 acres (100 percent) of Type 3 stands located in the connectivity area would be considered for treatment (Table 2-2).

Management activities in Habitat Type 5 stands would be spaced out geographically and temporally. Type 5 stands would generally be considered for treatment only in situations where two or more overlapping management concerns were identified. Of the total 3,641 acres of Habitat Type 5 in the connectivity area, this would include 1,140 acres (31 percent) of stands in this area (Table 2-2). All treatments in Habitat Type 5 would likely include pile burning and then subsequent underburning. Habitat Type 3 would be burned selectively as some young trees could not withstand any significant level of prescribed fire.

3. Proposed Treatments in Young Stands

Following treatments in the WUI and the area of connectivity, the third priority for management of forested stands in the OGEA would be the analysis and potential treatment of Habitat Type 3 stands located outside of these areas (Map 9). Habitat Type 3 stands are not currently providing habitat for late-successional species as they are primarily

Table 2-2. Acres Proposed for Management Activities in the OGEA*

Proposed Treatments	Habitat Type (Acres)				
	Type 1 (old-growth)	Type 2 (mature)	Type 3 (young)	Type 5 (dispersal)	Total Acres
1. WUI	0	200	70	460	730
2. Connectivity Area	0	0	1,410	1,140	2,550
3. All Young Stands	0	0	2,385	0	2,385
Total # of acres of each habitat type in the OGEA	3,426	9,393	3,865	8,654	25,337
Acres (percent of each habitat type treated in the OGEA)	0	200 (2%)	3,865 (100%)	1,600 (19%)	5,665 (22%)

*Acres are rounded.
Most areas proposed for management activities would be thinned; approximately 3,700 acres would be treated with prescribed fire.

comprised of even-aged pine trees that were planted following clearcuts. Currently, many of these stands are on developmental paths that may not provide adequate or desirable structural late-successional and old-growth characteristics. The overall objective of stand management would be to promote the development of stands that would more closely pattern historic forest development. The remaining 2,385 acres of Habitat Type 3 stands outside of the WUI and Connectivity Area would be thinned contingent on site-specific analysis. Habitat Type 3 would be burned selectively as some young trees could not withstand any significant level of prescribed fire. For all Type 3 stands in the monument, approximately 50 percent would likely require prescribed fire.

IMPLEMENTATION CONSIDERATIONS IN THE OGEA

Although the intent of this process is to identify areas where progress can be made toward meeting multiple management objectives, numerous other considerations will influence where management activities take place. Mapping specific objectives does not take into account a variety of other factors that may play a role in determining where active management is appropriate. Additional considerations may either increase the need to treat a particular area, or eliminate it from treatment altogether. Several additional factors (described below) would be considered prior to project development and implementation.

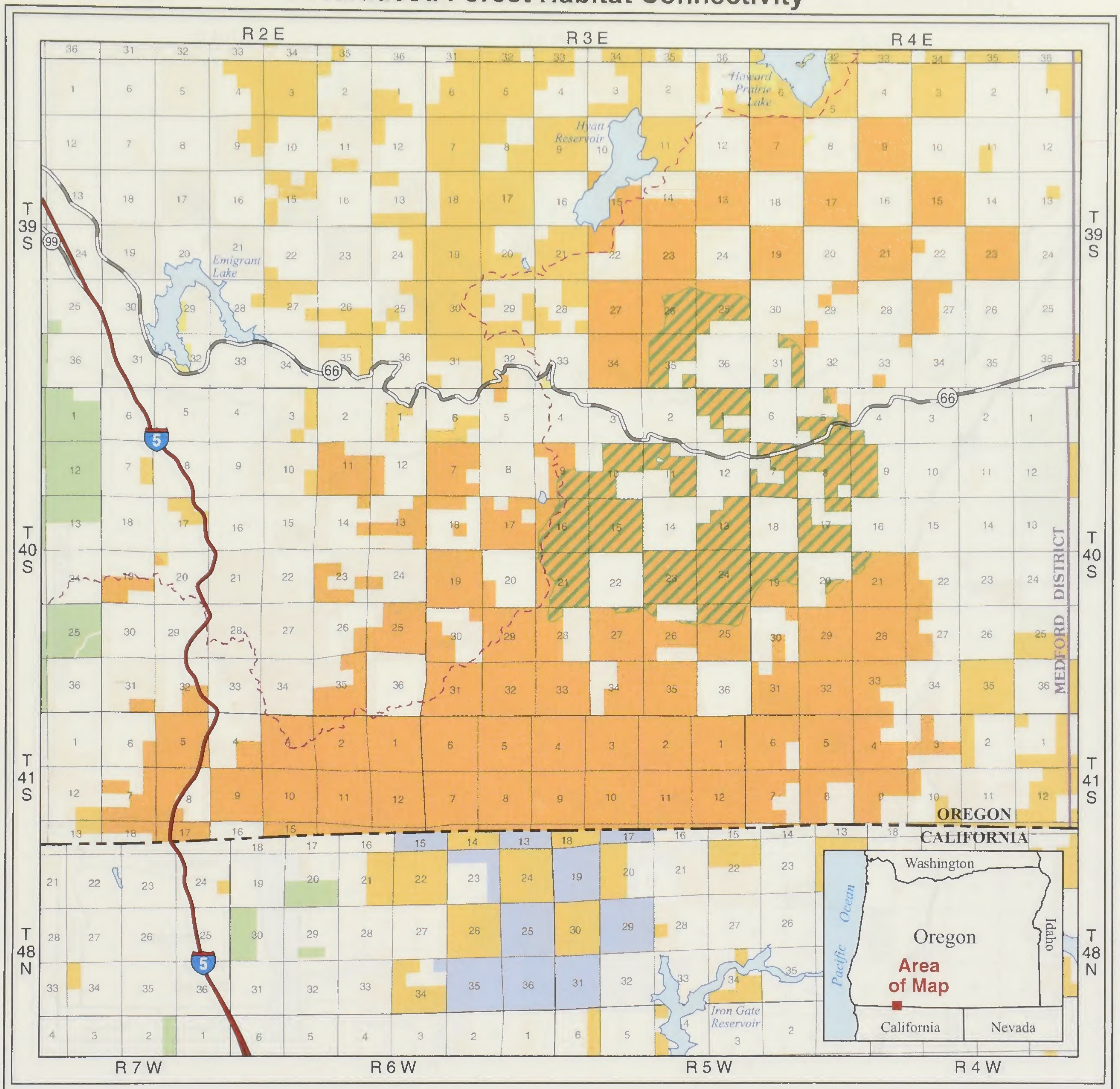
All proposed management activities would be evaluated in light of potentially constraining issues or other concerns. All stands considered for treatment would be examined within the context of the surrounding landscape. Management activities would be avoided where adverse ecological impacts could outweigh potential gains.

Additional management considerations would include, but not be limited to, the following:

- Proximity to populations of noxious weeds;
- On-the-ground confirmation of data used to map priority areas (e.g., fire hazard);
- Susceptibility of site soils to weed invasions;
- Soils with perched water tables;
- Condition of fuels build-up across the landscape and location of natural fuelbreaks;
- Large concentrations of riparian habitat or springs;
- Potential for adverse impacts to the surrounding landscape;
- Proximity and percentage of treated areas to untreated areas;
- Proximity of stands to sensitive wildlife sites such as northern spotted owls or other raptor nests;
- Presence of rare or sensitive plants that may be affected by proposed treatments;
- Timing of treatments in relationship to other management activities including cumulative effects;
- Potential effect of treatment on existing areas of strong habitat connectivity;
- Natural vegetation potential for a particular site;
- Site-specific determination of historic fire regime and condition class (Appendix E).

In designing logistically feasible and operationally sensible projects, it may be necessary to incorporate and analyze for possible treatments stands that have differing priority rankings in the same project. Site-specific management would be based on ecoregion characteristics (Appendix H).

Map 8: Cascade-Siskiyou National Monument Reduced Forest Habitat Connectivity



LEGEND

▨ Reduced Connectivity (8,890 Acres)

╌╌ Pacific Crest Trail

— BLM District Boundary

BLM Administered Land

🟧 Cascade-Siskiyou National Monument

🟨 Other

Other Administered Land

🟩 Forest Service

🟨 Bureau of Reclamation

🟦 State

⬜ Private or Other

N W E S

1 0 1 2 Miles

1 0 1 2 Kilometers

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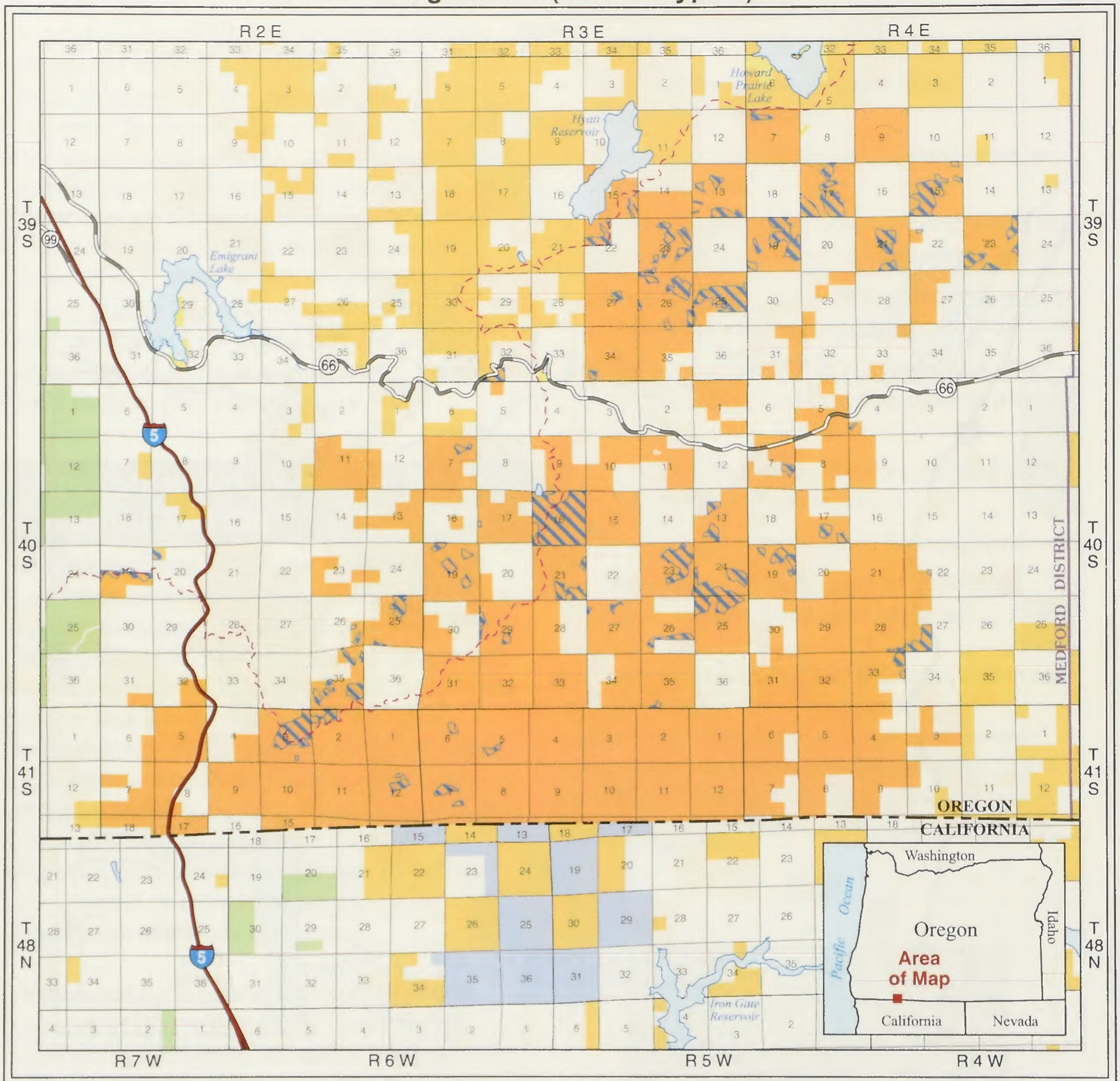
Map 9: Cascade-Siskiyou National Monument Young Stands (Habitat Type 3)



LEGEND

▨ Young Stands 3,865 Acres

- - - - - Pacific Crest Trail

—— BLM District Boundary

BLM Administered Land

🟧 Cascade-Siskiyou National Monument

🟨 Other

Other Administered Land

🟩 Forest Service

🟨 Bureau of Reclamation

🟦 State

⬜ Private or Other

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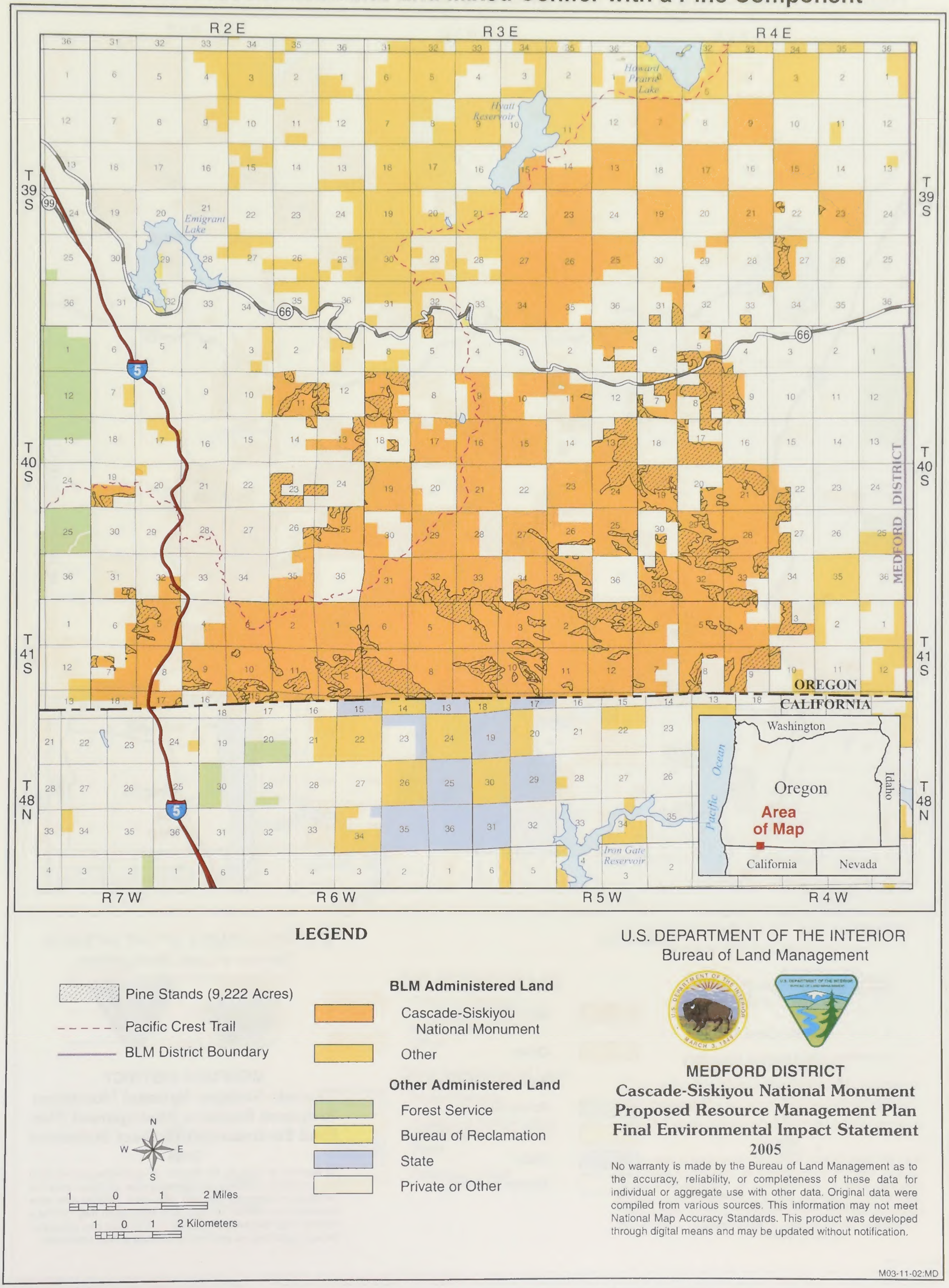
Map 10: Cascade-Siskiyou National Monument Pine Forest Communities and Mixed Conifer with a Pine Component



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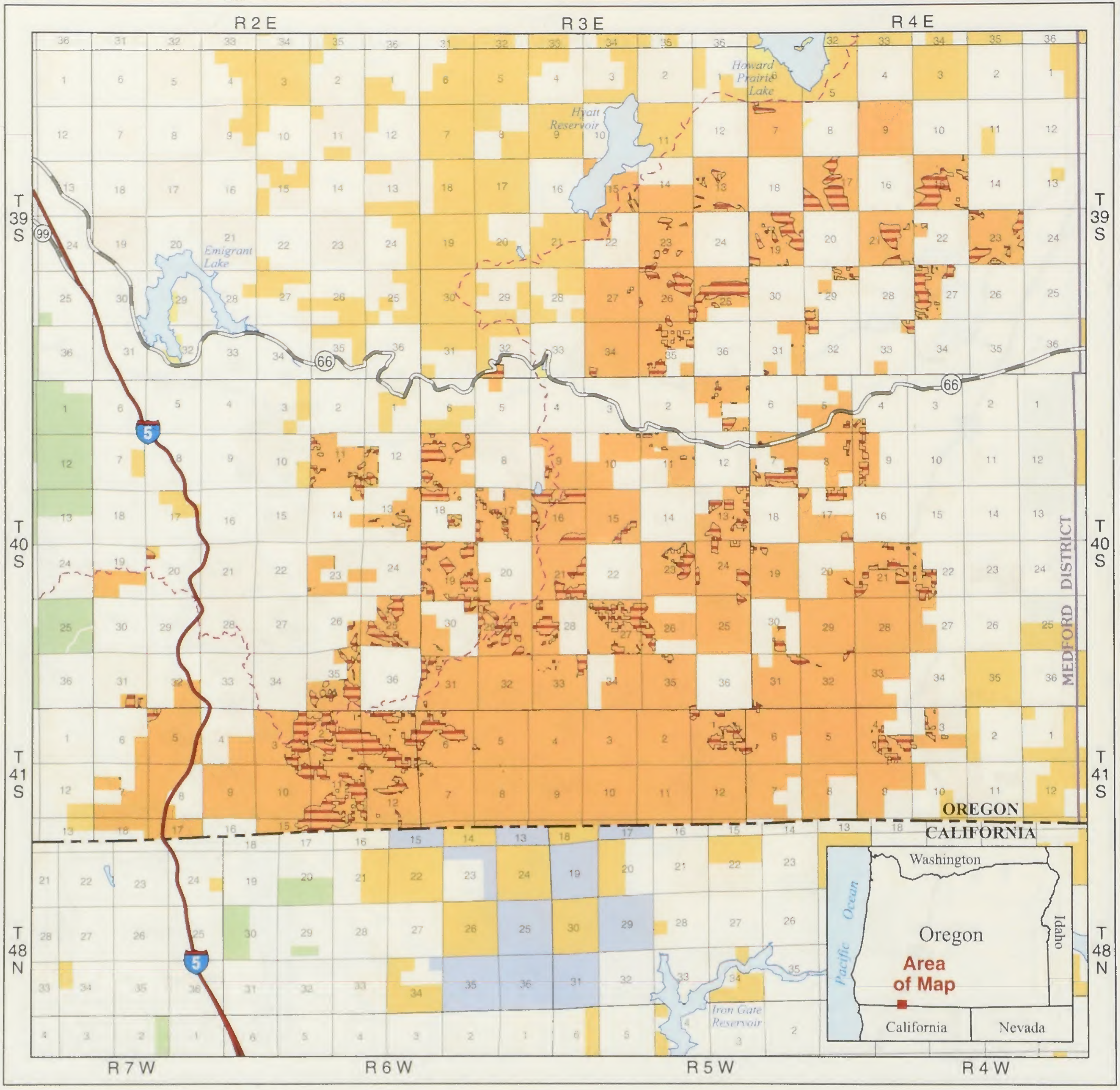
Map 11: Cascade-Siskiyou National Monument
High Fire Hazard within 1/4 Mile of Old-Growth and Late-Successional Habitat



LEGEND

🟥 High Hazard (5,954 Acres)

- - - - - Pacific Crest Trail

——— BLM District Boundary

BLM Administered Land

🟧 Cascade-Siskiyou National Monument

🟨 Other

Other Administered Land

🟩 Forest Service

🟨 Bureau of Reclamation

🟦 State

⬜ Private or Other

N W E S

1 0 1 2 Miles

1 0 1 2 Kilometers

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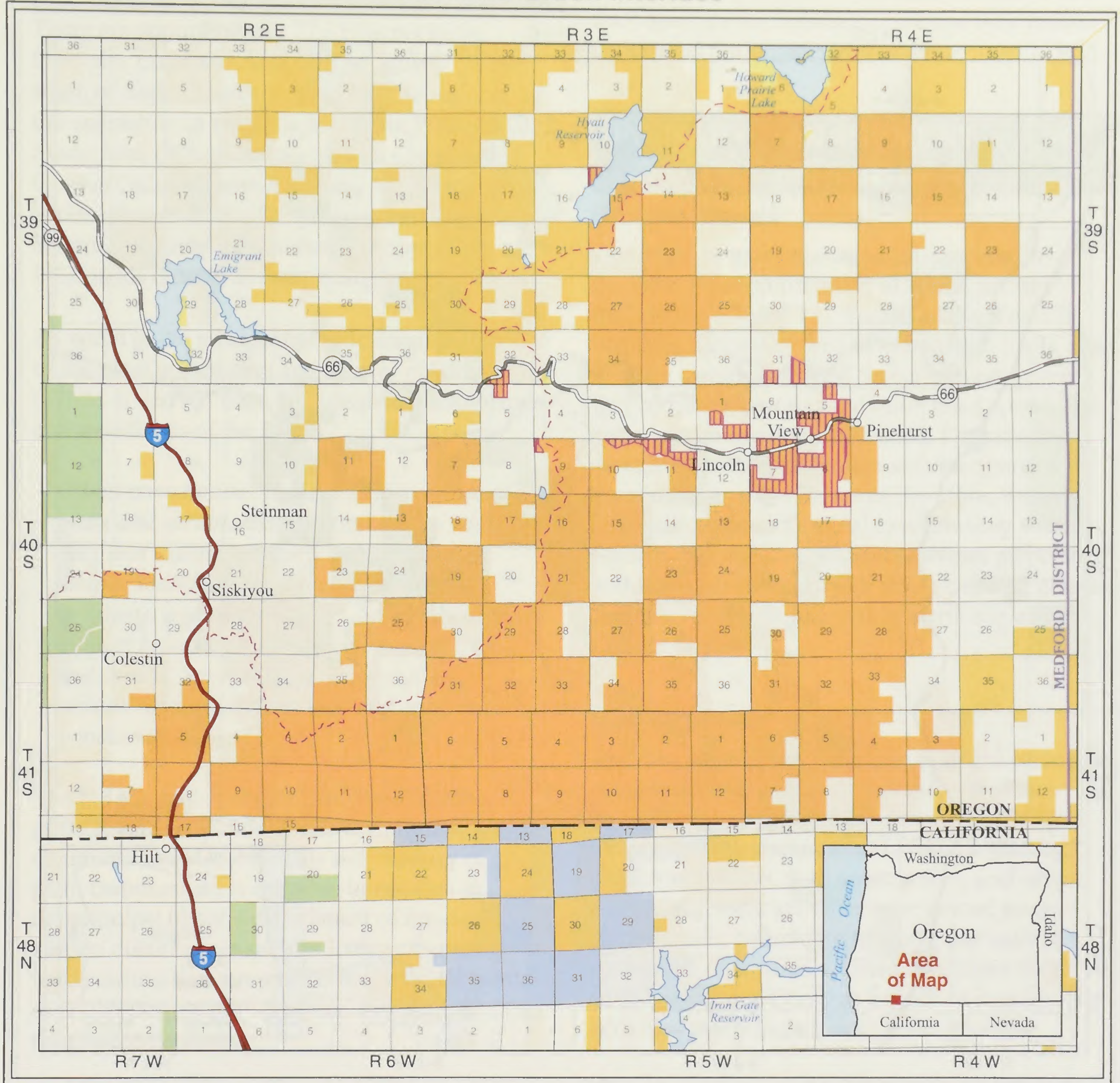
Map 12: Cascade-Siskiyou National Monument Wildland-Urban Interface



LEGEND

▥ Wildland-Urban Interface

- - - - Pacific Crest Trail

— BLM District Boundary

BLM Administered Land

🟧 Cascade-Siskiyou National Monument

🟧 Other

Other Administered Land

🟩 Forest Service

🟨 Bureau of Reclamation

🟦 State

⬜ Private or Other

N W E S

1 0 1 2 Miles

1 0 1 2 Kilometers

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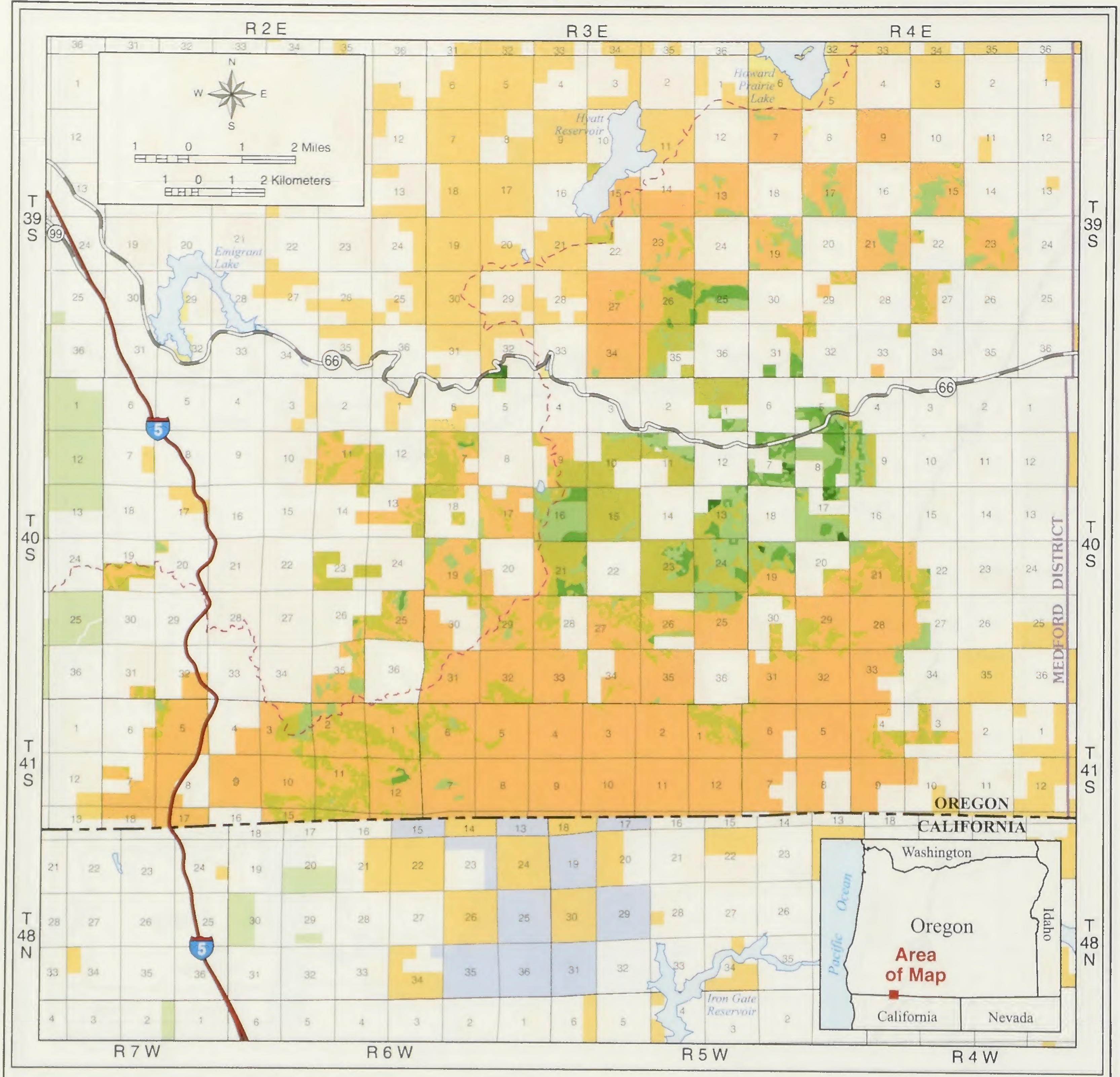
Map 13: Cascade-Siskiyou National Monument Priority Areas



LEGEND

Number of Concerns

- 🟩 4 (121 Acres)
- 🟩 3 (1,640 Acres)
- 🟩 2 (4,681 Acres)
- 🟨 1 (10,278 Acres)

- ---- Pacific Crest Trail
- —— BLM District Boundary

BLM Administered Land

- 🟧 Cascade-Siskiyou National Monument
- 🟨 Other

Other Administered Land

- 🟩 Forest Service
- 🟨 Bureau of Reclamation
- 🟦 State
- ⬜ Private or Other

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The Diversity Emphasis Area

OVERVIEW

There are approximately 27,610 acres in the Diversity Emphasis Area (DEA), mostly located south of Soda Mountain (Map 5). The majority of the vegetation in the Soda Mountain Wilderness Study Area (WSA) and the Scotch Creek and Oregon Gulch Research Natural Areas (RNAs) is classified as DEA. The proposed management activities described in this section apply only to DEA lands outside of these designations.

As noted in the presidential proclamation, much of the plant community and species richness of the CSNM is derived from the grasslands, shrublands, and woodlands of the DEA:

> *"Plant communities present a rich mosaic of grass and shrublands, Garry [Oregon white oak] and California black oak woodlands, juniper scablands, mixed conifer and white fir forests, and wet meadows. Stream bottoms support broad-leaf deciduous riparian trees and shrubs. Special plant communities include rosaceous chaparral and oak-juniper woodlands."*

The DEA is comprised of hardwood, shrub, grass, semi-wet meadow, and wet meadow plant communities (Map 14). This rich tapestry of plant communities is dynamic in reaction to the principal historic disturbance of fire, and to current disturbances such as livestock grazing, road construction, prescribed fire, wildlife habitat rehabilitation, pasture creation, seeding, and other range improvements.

Unlike conifer communities in the Old-Growth Emphasis Area (OGEA), the plant communities in the DEA are characterized by large changes in species abundance over relatively short periods of time in response to fire. This is because many plant species have short life spans, and are dependent on fire for reproduction. Herbaceous plants may thrive for only a few years before conditions change enough to prevent growth. Shrub species may become decadent after a few decades, and need to be renewed through activation of their seed bank by fire. Furthermore, many hardwood species are dependent on fire for creating conditions favoring their persistence on the landscape. Other plant communities associated with rocky meadows and rock outcrops are resistant to fire and may remain unchanged for long periods of time.

PRIMARY MANAGEMENT CONCERNS IN THE DEA

Noxious Weeds

One of the primary management concerns in the DEA is the proliferation of weeds across the landscape (Map 15). Spatial analysis in GIS indicates that weeds are associated with roads, sites of acute disturbance (past timber harvest, power line corridors, pastures and other tilled areas), and areas of high livestock utilization. Disturbance associated with management activities may favor noxious weed invasion; therefore, limiting disturbance appears critical to controlling weeds. Some of the major ecological problems associated with grass/shrub/woodlands involve annual grasses, and noxious weeds like yellow starthistle and Canada thistle.

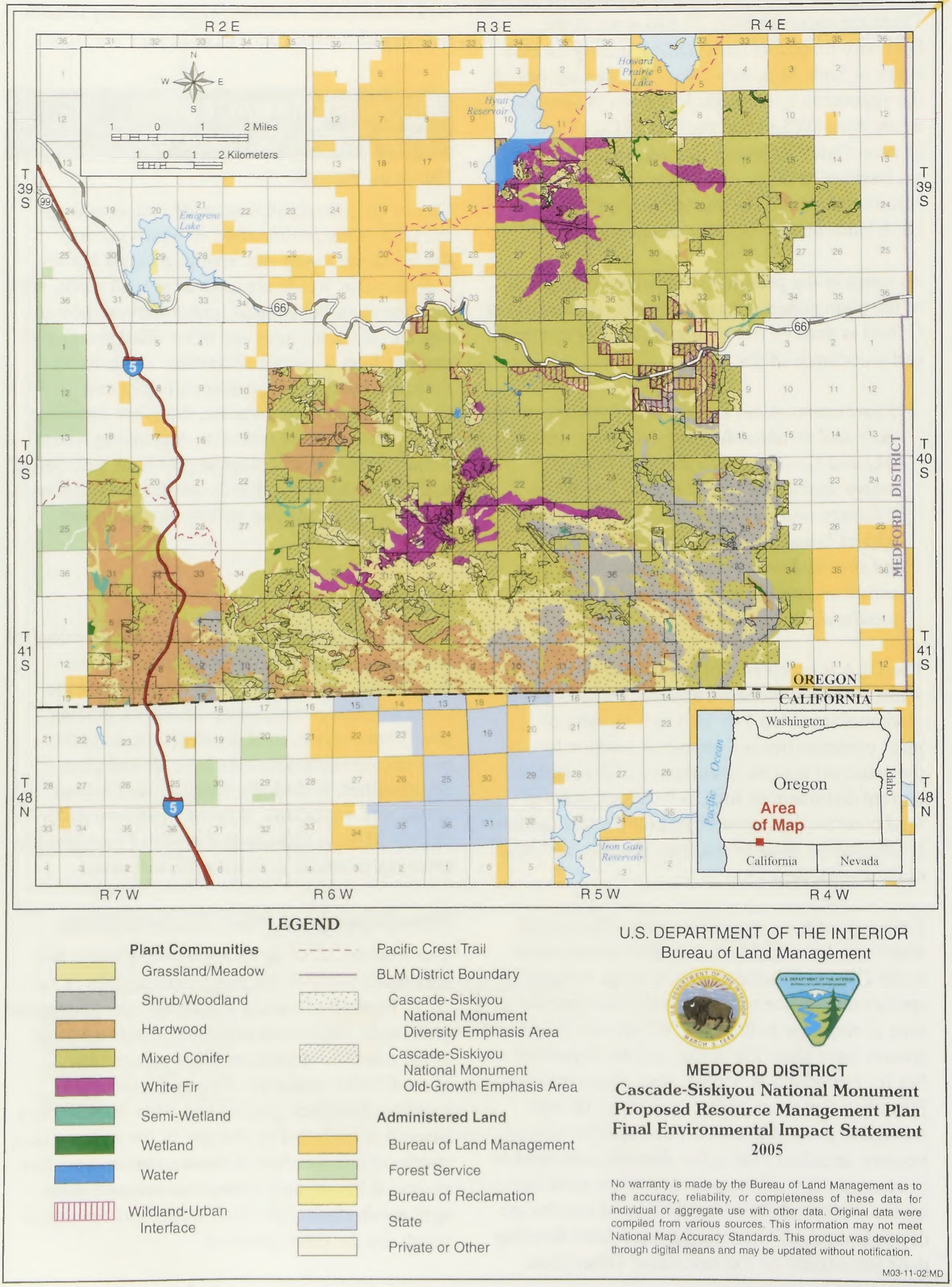
Riparian Areas

Riparian plant communities are a critical ecological component of the DEA as wetlands, streams, floodplains, springs and seeps represent a wide range of plant communities. Livestock grazing, pond construction, road construction, and other past management activities have altered plant communities, hydrologic function, and habitat for aquatic organisms. Current conditions differ from historic conditions as a result of management activities practices and natural disturbances.

Fire-Dependent Plant Communities

The removal of fire as an ecological process has influenced many of the plant communities in the DEA. Foothill mountain grasslands, steep mountain grasslands, and biscuit scablands represent some of the most fire-dependent plant communities of the CSNM landscape. Fire exclusion, weed invasion, livestock grazing and other disturbances have all contributed to changes in the composition, structure, and function of these communities. Fire exclusion has created a preponderance of older-aged shrub stands, of which wedgeleaf ceanothus stands are the most common.

Map 14: Cascade-Siskiyou National Monument Distribution of Plant Communities



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Cascade-Siskiyou National Monument
Proposed Resource Management Plan
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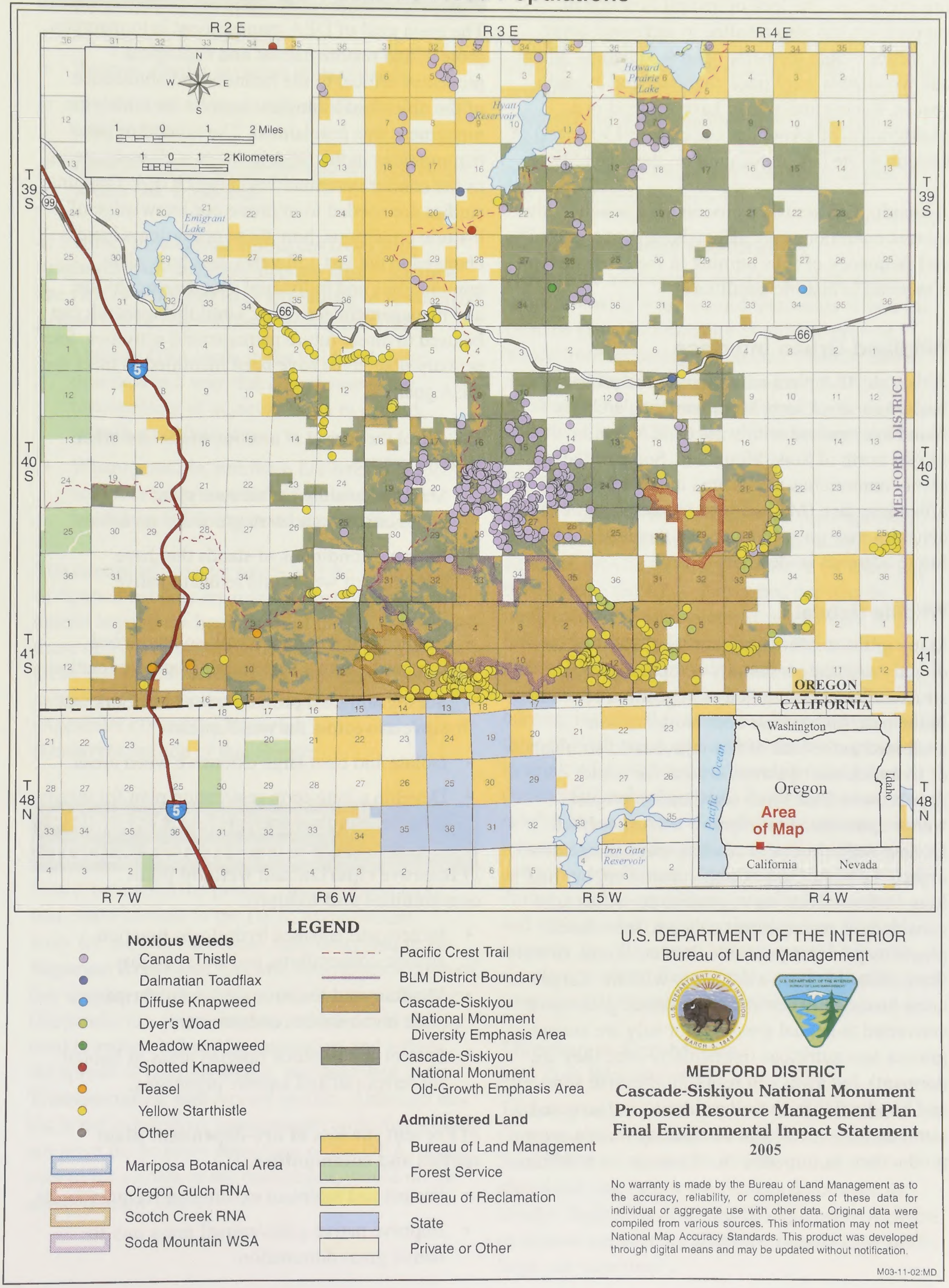
Map 15: Cascade-Siskiyou National Monument Noxious Weed Populations



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Mesic (relatively moist) oak woodlands are subject to conifer invasion as a consequence of fire exclusion. The lack of natural fires due to suppression has also resulted in increased cover by shrubs within formerly open woodlands. Where oak woodlands were once characterized by open spaces, fire exclusion may have resulted in a proliferation of a younger age class (<130 years) of Oregon white oak, depending on stand conditions.

Appendix E describes a process for assessing how current conditions may affect the severity, intensity, and frequency of fires burning in the ecosystem as compared to historic conditions.

Wildland-Urban Interface

Although DEA plant communities are primarily located south of Soda Mountain, they are also found interspersed within the OGEA conifer forests north of Soda Mountain. Some of these plant communities are located in the wildland-urban interface (Map 12) and increased shrubland densities may pose an increased threat of wildland fire to adjacent landowners.

Wildlife Habitat

Many of the wildlife issues of the CSNM relate directly to plant community compositional and structural issues identified as vegetation concerns. In the past, high winter deer mortality was attributed to the lack of fire-rejuvenated shrublands or livestock use of shrubs critical for winter deer browse. Past shrub scarification projects were implemented to improve wildlife habitat. Dozing and subsequent seeding met management objectives at the time of implementation, but had long-lasting effects on vegetation attributes now considered a management concern. Introduced plants may be less palatable, less nutritious, or have floral parts that pose a danger to wildlife. Large areas historically dominated by bunch grass have converted to annual grasses. Not only are annual grasses less nutritious (particularly once they are dormant), but awns can result in intestinal sores and blind wildlife as well as livestock. Increased stand density in oak woodlands may reduce acorn production, an important food source for wildlife.

PRIMARY MANAGEMENT OBJECTIVES FOR THE DEA

The main goal of DEA management is to maintain, protect, and restore habitat and ecological processes critical to the richness and abundance of the objects of biological interest for which the monument was proclaimed. The myriad of plant communities in the DEA is not as well understood as the conifer communities in the OGEA. Ongoing studies are needed to improve our knowledge of historic conditions, how these ecosystems have changed in the last 150 years, and how plant communities and individual species react to fire and management activities. Until this research can be used to direct future management activities, four primary objectives have been identified to meet the DEA goal:

1) Control the spread of noxious weeds and other invasive grasses.

- Maintain healthy herbaceous plant communities as a barrier to weed invasions.
- Improve conditions of stands that have a mixture of weeds and remnant native herbaceous species.
- Eradicate and restore small isolated weed patches to native herbaceous plant domination.
- Survey and treat primary travel corridors that serve as vectors for weed spread.
- Isolate and treat large extensive weed areas.
- Develop a long-term restoration plan for weedy areas greater than one acre.

2) Improve riparian and wetland plant communities and habitats.

- Protect and enhance hydrologic function, aquatic connectivity, and water quality.
- Maintain and improve wetland and riparian plant communities and structure.
- Protect and enhance riparian areas as habitat for terrestrial and aquatic organisms.

3) Prevent the loss of fire-dependent plant species and communities.

- Protect and maintain existing native grasslands.
- Improve native grass/annual grass mix to native grass domination.

- Restore annual grass monoculture to native grass domination.
- Recreate a range of wedgeleaf ceanothus stand ages across the landscape.
- Reverse conifer invasion in woodlands.
- Prevent loss of "open oak savanna" communities.
- Prevent loss of old-growth conifer component within oak woodlands.

4) Protect monument resources from fires originating on adjacent private lands. Reduce the risk of wildland fires spreading to residential properties in the wildland urban interface.

- Manage DEA lands in the wildland-urban interface in a way that complements the management of adjacent lands in the old-growth emphasis area.
- Where possible, reinforce fire hazard reduction activities on private lands by reducing fire hazard on adjoining monument lands.

The control of noxious weeds and the improvement of riparian habitats are management objectives that extend beyond the boundaries of the DEA. Although these objectives are of particular concern in the DEA, this section references rather than repeats the monument's landscape-wide noxious weed strategy (Appendix G) and the **Riparian Areas and Aquatic Resources** section of this chapter.

PRIMARY MANAGEMENT TOOLS FOR THE DEA

Listed below are the primary management tools that could be used in the DEA. Management tools for the DEA are more fully described in the **Riparian Areas and Aquatic Resources** section of this chapter and in the Weed Management Strategy (Appendix G). Road closures, which could also be used to reduce habitat fragmentation and reduce the spread of noxious weeds, are described in the **Transportation and Access** section. Although this list is not exhaustive, management tools that would not meet the primary objectives of the DEA, or the overarching goals of the monument, would not be allowed in the DEA.

Weed Treatments

Tools available to prevent and treat weeds include manual weeding, hot foam treatments, biological control, herbicides, or prescribed fire. Mowing and cultural methods such as disking would not be used within the DEA, except in limited circumstances such as road-bed decommissioning projects or mowing along road edges. Limited mowing, in addition to road edges, may take place as part of the pilot studies described below.

Plant Community Restoration

Native seed application could be used for several years following weed control treatments or in areas of acute ground disturbance in order to prevent weeds from becoming established. Planting native shrubs and trees, especially along treated riparian areas could help to restore and maintain healthy plant communities that are resistant to weed invasion.

Prescribed Fire

The fire-dependence of individual plant species, community composition, and community structure provides a strong incentive for allowing fire to shape the DEA. Prescribed fire may be implemented to initiate conditions thought to reflect historic conditions. Prescribed burning in the DEA would include handpile burning, underburning and broadcast burning. Handpile burning is utilized in areas that have been manually thinned, with brush and understory trees grouped in small piles. This type of burning takes place in the late fall and winter after a significant amount of rainfall has occurred. Underburning utilizes a low-intensity surface fire to reduce surface vegetation and some small trees. Underburning is conducted during weather conditions (usually late winter and spring) when moisture levels allow for low-intensity fire. Broadcast burning would occur to simulate wildland fire under controlled conditions from late fall through early spring.

Thinning in Shrublands and Oak Woodlands

Thinning may be used as a tool to restore dense Oregon white oak stands to historic tree density. Some historic oak savannah transitional with shrublands may show interspaces dominated by shrubs. Reduction of shrubs through prescribed fire or manual means may allow the preservation of the large oak structure.

PROPOSED MANAGEMENT IN THE DEA

Altered habitats including areas converted to weeds or sown non-native grasses, areas of high livestock utilization, and decadent shrublands would be the focus of pilot studies. All vegetation management activities aimed at vegetation restoration are therefore also considered to benefit wildlife.

Weed Abatement

A comprehensive strategy for treating noxious weeds across the monument is described in Appendix G. The treatments described in this strategy would not be limited by the pilot studies described below. Noxious weed treatments could include manual weeding, biological control, herbicides, prescribed fire or prescribed grazing. Focal areas identified for immediate treatments are identified in the weed strategy. Noxious weeds would be treated aggressively, contingent on funding. Current funding has allowed a mixture of hand-pulling and herbicide treatments on approximately 1,000 to 2,000 acres each year for the past several years. The only herbicide currently used in the monument is RODEO® (glyphosate).

Restoration and Protection of Riparian Areas and Wetland Plant Communities

Riparian areas and wetland plant communities are a critical component of the DEA. The restoration and protection of these areas is essential for maintaining the integrity and diversity of the DEA. The management activities proposed for these areas are addressed in the **Riparian Areas and Aquatic Resources** chapter of this document.

Pilot Studies in Fire-Dependent Plant Communities

Many concerns regarding the current condition of sensitive plants, wildlife, and fire-dependent plant communities can be addressed only after researchers examine (1) the nature of plant community dynamics in the DEA; and (2) the influence of past management activities. Past management activities such as oak woodland scarification, fire rehabilitation, and seeding of non-native perennial grasses were designed to improve forage for both wildlife and cattle. These activities have influenced plant community dynamics throughout the DEA. In order to understand the complexities of change in the DEA, knowledge about the extent and nature of these past management activities is needed.

An examination of cadastral surveys, aerial photos, historic photos, and other historic sources of information will be used to gather baseline data. In addition, this plan proposes to enhance the knowledge and understanding of the DEA through a series of pilot studies. As research and pilot studies are completed, new information could give the monument staff a basis for re-examining the DEA's management strategy. New objectives or management direction would be developed in accordance with the monument's adaptive management strategy (see Appendix C).

Fire-dependent plant communities are primarily categorized as grasslands, shrublands, and woodlands. Objectives and some of the primary management tools under consideration are described below. With the exception of management activities in the wildland-urban interface, all treatments in grasslands, shrublands, and woodlands would be limited to the pilot studies described below.

Pilot studies would be limited to 10 acres in size with the exception of studies that involve broadcast burning. Studies that involve the use of broadcast burning would be limited to 100 acres in size. Broadcast burning would be limited to 200 acres annually, with no more than 100 acres occurring in a drainage area. Other types of prescribed burning would be limited to 10 acres in size. To mitigate potential impacts, pilot studies would be spread out spatially and temporally. Pilot studies would be placed to avoid sensitive plant communities associated with perennial streams, seeps, springs, and wetlands. Prior to implementation of multiple studies, additional analysis would determine the potential for site-specific and cumulative effects.

Grasslands

Foothill mountain grasslands, steep mountain grasslands, and biscuit scablands represent some of the most fire-dependent plant communities in the monument. Many lower-elevation communities in the DEA consist of an annual grass monoculture, or have annual grasses as a dominant component.
Table 2-3 describes three primary objectives for grasslands.

Table 2-3. Grassland Objectives and Proposed Pilot Studies

GRASSLAND OBJECTIVES	PILOT STUDIES/TOOLS
1. Maintain and protect existing native grasslands. Many types of grassland are maintained by disturbance. Fire plays a critical role in the individual species ecology of grassland dwelling species (vigor, seedset, tillering ability, successful seed germination).	**Prescribed fire – Broadcast burning** Treatments employing the use of broadcast burning to remedy grassland degradation would be studied. Treatment application during the summer dormant season is most favorable, but not feasible due to fire danger.
2. Improve native grass/annual grass mix to native grass domination. Annual grasses can invade decadent native grasslands following long-term fire exclusion, or low-vigor grasslands following long-term livestock impact.	**Weed treatments** Weed treatments (prescribed fire, mowing, prescribed short-duration, high-intensity livestock grazing) to prevent annual grass seedset would be studied. Two applications per year may be necessary to prevent seedset and treatments may need to continue for two or more years. Native grass seed application may also be necessary.
3. Restore annual grass monoculture to native grass domination. Dense stands of early germinating or maturing annual grasses out-compete native grasses seedlings for water and nutrients. In some cases medusahead exacerbates the problem through establishment of a thick duff layer.	**Weed treatments** Prescribed fire, mowing, prescribed short-duration, high-intensity livestock grazing treatments and/or herbicide application would be studied for effectiveness in controlling the seedbank and promoting successful native grass establishment. Native grass seed application would be an essential part of any restoration effort.

Shrublands

Wedgeleaf ceanothus stands are the most common shrubland of the monument landscape. Since the life-cycle of shrublands includes a stage of herbaceous domination following fire, all grassland management objectives (Table 2-3) may also apply to shrublands. Primary shrubland management objectives are described in Table 2-4.

Table 2-4. Shrubland Objectives and Proposed Pilot Studies

SHRUBLAND OBJECTIVES	PILOT STUDIES/TOOLS
Rejuvenate wedgeleaf ceanothus stands. Fire exclusion has created a preponderance of older-aged shrub stands, many of which need to be rejuvenated through prescribed fire.	**Prescribed fire – Broadcast burning** Treatments employing the use of broadcast burns would be used to reinitiate shrub stands. In order to facilitate the use of broadcast burning, some shrublands would be handcut, piled and burned in order to create low-fuel areas on the perimeter of the burn area.
Develop a long-term shrubland management strategy.	**Survey shrublands** A survey of all wedgeleaf ceanothus stands (stand age, stand cover) and their understory would be used to create a long-term shrubland management strategy.

Woodlands

A large range of woodland types exist in the CSNM, including Oak-Bunchgrass, Oak-Juniper-Fescue, Oak-Pine-Fescue, Oak-Pine-Oatgrass, Pine-Oak-Terrace, Pine-Oak-Fescue, Oak- Mahogany-Fescue, and high-elevation stands of Brewer's oak. These communities overlap with grasslands and shrublands (Tables 2-3 and 2-4) and thus the management objectives for grasslands and shrublands are also pertinent to woodlands. Management objectives for woodlands are described in Table 2-5.

Table 2-5. Woodland Objectives and Proposed Pilot Studies

WOODLAND OBJECTIVES	PILOT STUDIES/TOOLS
1. Reverse conifer invasion. Mesic (relatively moist) oak woodlands are subject to conifer invasion as a consequence of fire exclusion.	**Prescribed fire – Handpile burning and underburning** Prescribed fire would be studied for effectiveness in reducing conifer canopy cover within oak woodlands. Manual treatments (cutting, piling, and burning) would be used where underburning cannot be safely reintroduced.
2. Prevent loss of 'open oak savanna' communities. Much of the historic savannah oak woodland remains in an open condition. In mesic oak woodlands areas, fire exclusion has resulted in a proliferation of a younger age class (<130 years) of Oregon white oak. Increased stand density is believed to have reduced acorn production. Remaining stands of native herbaceous understory species are frequently associated with Oregon white oak canopy.	**Thinning and shrub reduction** The effectiveness of thinning dense Oregon white oak stands to historical tree density would be studied. Thinning should only occur providing there is no loss of the native herbaceous component within newly created interspaces. Historic oak savannah transitional with shrublands may show interspaces dominated by shrubs. Reduction of shrubs through prescribed fire or manual means may allow the preservation of the large oak structure.
3. Prevent loss of old-growth conifer component in oak woodlands. Historically, many oak woodlands contained an old-growth conifer component. Photo-retakes indicate that timber harvest had removed many old-growth conifers from oak woodlands by the 1950s. Some old-growth conifers remain and younger conifers are now present.	**Thinning/Prescribed fire** Thinning dense stands of young conifers and shrubs would be studied as a way to protect dominant conifers from fire (prescribed or wildland fire) under existing conditions. Where thinning can be achieved through prescribed fire, manual litter reduction may be required around the base of leave trees.

Reduce fire hazard in the wildland-urban interface

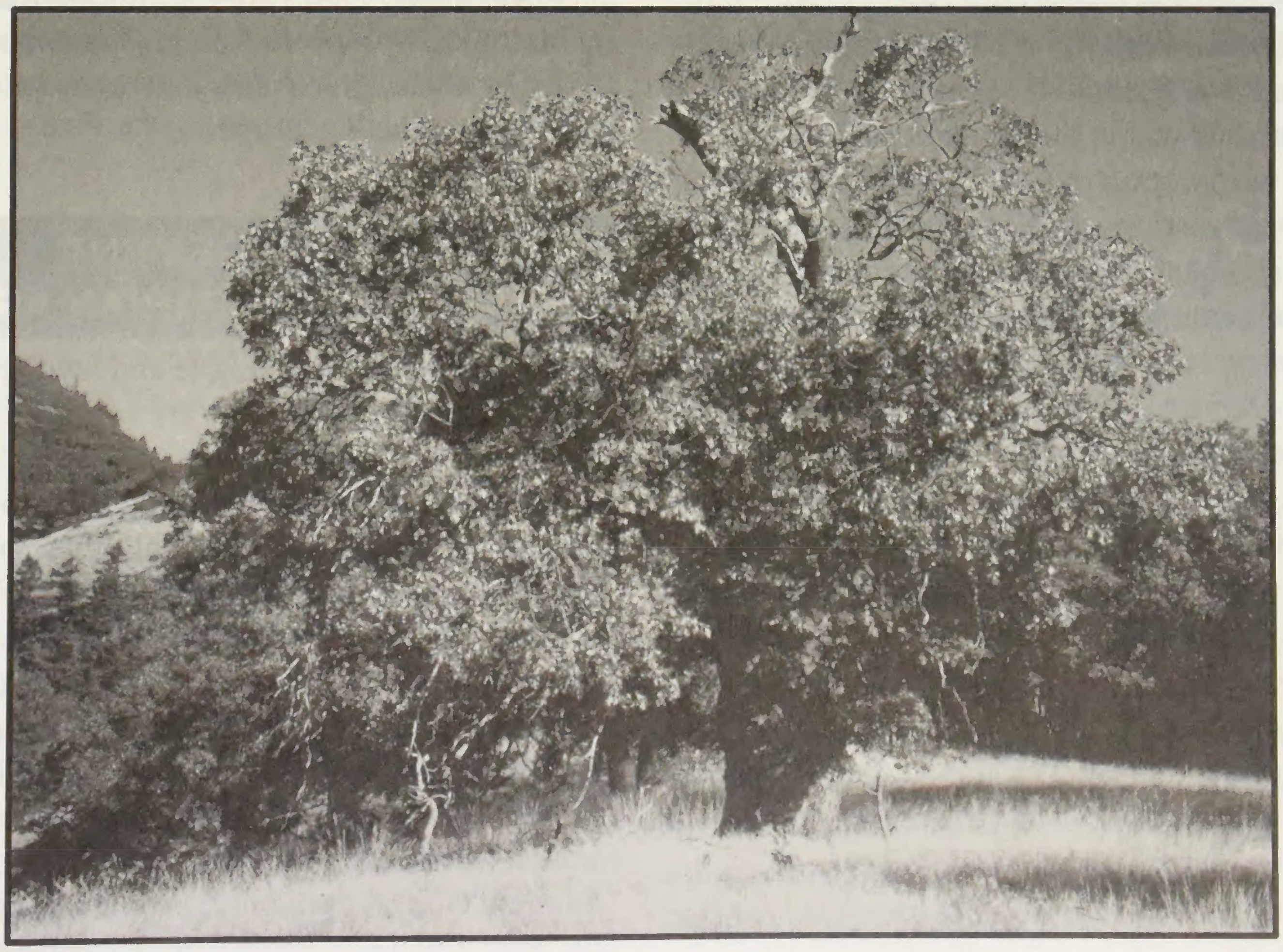
Approximately two percent of the DEA (640 acres) is located within the wildland-urban interface (WUI) (Map 12). Fire hazard on DEA plant communities in the WUI could be reduced using manual thinning and/or prescribed burning. Up to 50 percent of the DEA lands within the WUI could be treated to reduce fire hazard. Treated and untreated areas would be interspersed in order to (1) prevent the accumulation of decadent shrubs and ensure that a high proportion of shrublands will be in a relatively low-fuel condition at all times; and (2) retain areas of higher canopy closure habitat for wildlife. Seeding with native grasses may be used to revegetate disturbed areas and reduce the invasion by non-native species.

IMPLEMENTATION CONSIDERATIONS IN THE DEA

All proposed management activities would be evaluated in light of potentially constraining issues or other concerns. All areas considered for treatment or pilot studies would be examined within the context of the surrounding landscape. Management activities would be avoided where adverse ecological impacts could outweigh potential gains.

Prior to the implementation of any project in the DEA, the following considerations would be taken into account:

- Proximity to populations of noxious weeds.
- Susceptibility of site soils to weed invasions.
- Soils with perched water tables.
- Condition of fuels build-up across the landscape and location of natural fuelbreaks.
- Large concentrations of riparian habitat or springs.
- Potential for adverse impacts to the surrounding landscape.
- Proximity and percentage of treated areas to untreated areas.
- Proximity of stands to sensitive wildlife sites such as northern spotted owls or other raptor nests.
- Presence of rare or sensitive plants that may be adversely affected by proposed treatments.
- Timing of treatments in relationship to other management activities.
- Potential effect of treatment on existing areas of strong habitat connectivity.
- Natural vegetation potential for a particular site.
- The impact of management activities on current monitoring and data collection.
- The need to remove livestock from recently treated areas.
- Site-specific determination of historic fire regime and condition class (Appendix E).



Riparian Areas and Aquatic Resources

OVERVIEW

Riparian areas consist of plants that grow adjacent to streams or lakes, as well as the aquatic ecosystem and the adjacent upland areas that directly affect this ecosystem. Although riparian areas constitute a small portion of the total land area, they are more productive in terms of both plant and animal species diversity than the remaining land base (Platts and Raleigh 1984). The importance of riparian area habitat to the maintenance of ecological integrity at the landscape and local scales cannot be over-emphasized. Riparian areas and associated wetland habitats are some of the most productive, ecologically valuable, and utilized resources in the monument.

Riparian reserves are portions of watersheds where riparian-dependent resources receive primary emphasis and where special standards and guidelines apply. Stream categories and associated buffer widths are described in the Northwest Forest Plan Standards and Guidelines (USDA, USDI, 1994b). Riparian Reserves are assigned to all streams within the monument and are used to describe where some management activities would or would not take place.

Streams in the monument drain two distinct systems: the Klamath River basin to the south and the Rogue River basin to the northwest. Natural aquatic habitats within the monument include wetlands, seeps, springs, vernal pools, intermittent and perennial streams, and fish-bearing streams. Non-natural aquatic habitats throughout the monument include irrigation ditches, reservoirs, pump chances, spring developments, and the Talent Irrigation District (TID) diversion system.

Wetlands, riparian areas, floodplains, springs and seeps host a wide range of plant communities. For example, many seeps and springs offer habitat to rare aquatic mollusks and seasonal wetlands and pools provide habitat for rare plants. Aquatic insects are also important indicators of biological diversity and ecological integrity. Throughout the monument, aquatic monitoring has identified rare, endemic, and unusual combinations of aquatic insects.

The presidential proclamation noted that, "The Jenny Creek portion of the monument is a significant center of fresh water snail diversity, and is home to three endemic fish species, including a long-isolated stock of redband trout." In addition to the redband trout, the endemic Jenny Creek sucker, and the speckled dace are also found in Jenny Creek. The Jenny Creek watershed is host to a number of special status and sensitive aquatic species as identified by both state and federal agencies. The Northwest Forest Plan identified the Jenny Creek watershed as a Tier 1 Key Watershed. Tier 1 watersheds contribute directly to conservation of at-risk salmon and resident fish species (USDA/USDI 1994b).

Aquatic connectivity is critical to the biological and physical health of streams. Riparian areas are the interface between the terrestrial and aquatic environments and play an essential role in maintaining aquatic connectivity throughout the monument. Very few of the wetlands in the monument are closed hydrologic systems. Water storage and water quality from these wetlands directly affect water quality and the availability of summer flows in the downstream aquatic systems. The isolated springs and seeps of Soda Mountain and Keene Ridge, and the sag ponds such as those found at Parsnip Lakes are uncommon features that are biologically important on the landscape. These particular areas contain species that are not found on the rest of the landscape.

PRIMARY MANAGEMENT CONCERNS IN RIPARIAN AREAS

Riparian areas are both fragile and resilient environments. They are also are sensitive to disturbance events. Events such as flooding are part of the natural disturbance regime. However, past and current management activities have created circumstances where natural processes are compromised. More specifically, human activities have resulted in the fragmentation of the monument's aquatic ecosystem, changed the plant community structure, composition, and function of riparian areas, and reduced the value of these areas for aquatic and terrestrial species.

Riparian and Aquatic Habitat Fragmentation

Throughout the monument, fragmentation of the aquatic network has resulted in the disruption and loss of functions and processes necessary to create and maintain habitat required by fish, amphibians, and other riparian and aquatic-dependent plants and animals. The checkerboard ownership within the greater monument boundary contributes to the fragmented condition of the monument's aquatic landscape, especially in the north. The mixture of public and private lands also limits restoration opportunities for aquatic ecosystems. Past management activities, high road densities, dams and irrigation diversions, loss of floodplain connectivity, and beaver extirpation have all contributed to habitat fragmentation.

Past Management Activities

Past timber harvest, road construction, livestock grazing, and other management activities have altered stream connectivity by reducing shade, removing large wood, and increasing sediment delivery and altering channel dynamics. In many places, clearcuts that extended into riparian areas removed the large wood component.

Springs, seeps, and wetlands have also been altered as a consequence of altered hydrology. Range facilities (the creation of stock ponds) and associated roads have altered the flow of water and may have deprived historic wetlands of water, and also inadvertently created and maintained new wet areas.

Road Density

Roads and associated culverts are often barriers to aquatic organisms, fragmenting populations and limiting dispersal. High road densities currently exist in riparian areas throughout the monument (3.7 mi./mi.^{2} in riparian reserves).

Dams and Irrigation Diversions

Dams and irrigation diversions (as described in the draft plan) serve as partial to complete barriers to fish migration. Water withdrawals for irrigation purposes limit aquatic connectivity by reducing flows in natural channels as water is diverted into irrigation channels. Water withdrawals leave certain stream sections dry during critical times of the year, limit access to historic spawning sites, and result in higher summer temperatures. Hyatt Lake and Keene Creek Reservoirs block access of fish and aquatic organisms to large areas of historically accessible habitat, and eliminate the downstream flow of rocks, fine sediments, wood, and nutrients.

Loss of Floodplain Connectivity

Many stream segments in the monument have lost access to their floodplains. Reduced access to the floodplain increases channelization and decreases the structural diversity of streams. The loss of floodplain connectivity also increases velocity and streambank erosion, especially in the meadow areas with depositional soils.

Beaver Extirpation

Historically beaver dams maintained high water tables and wide riparian areas by adding structure to the floodplains, dissipating stream energy, and capturing sediment. As beaver were trapped and removed from the monument, these beneficial hydrologic functions have been diminished.

Changes in Plant Community Structure and Composition

Riparian plant community structure and composition are critical as wildlife habitat. Many plants and animals depend directly on riparian habitat or indirectly through the influence of riparian structure and composition on water temperature, sedimentation, turbidity, channel structure, and erosion during flood events.

Noxious Weeds

Noxious weeds and other invasive species are present in riparian areas and can displace the native vegetation used by aquatic and terrestrial wildlife. Some aquatic noxious weeds, such as purple loosestrife, are present in the region and could infest the monument's riparian ecosystems in the near future.

Livestock Utilization

Monitoring livestock impacts over the past few years has identified areas of high-forage utilization and trampling within riparian areas. Livestock-use patterns are reducing the functionality of some riparian and wetland areas. Livestock preference for certain plant species can change the competitive balance between species resulting in plant community changes. Indirect impacts such as soil compaction, reduced vegetation cover, and soil disturbance can favor weed establishment.

Loss of Riparian Habitat for Terrestrial and Aquatic Species

As riparian areas throughout the monument have been altered, the value of these areas for terrestrial and aquatic species has been diminished. The plant community structure and composition of riparian areas is correlated to the type of species that are able to utilize these areas for forage, habitat, and reproduction.

Increased Stream Temperatures

There are nine streams in the CSNM currently listed as water quality limited for temperature (summer) by the Oregon Department of Environmental Quality 303(d) list (ODEQ 2004) (Table 2-6). Changes in plant community structure through road-building, timber harvest, and livestock utilization can directly affect stream temperature through the alteration, reduction, or elimination of streamside vegetation. Streams have become wider and more shallow, allowing solar radiation to reach a larger surface area and heat the streams more quickly. Many aquatic species are not well-adapted to increased stream temperatures.

Sediment

Fine sediment generated primarily by roads, grazing, and past timber harvest can negatively impact aquatic organisms and their habitats by filling in pools, silting in spawning gravels, and limiting habitat for macroinvertebrates. Sediment occurs naturally in stream systems but is flushed out during high flow events in a properly functioning stream system. When compounded with altered hydrologic regimes and degraded habitat, sedimentation becomes a serious issue for aquatic organisms.

Livestock

In some areas livestock use patterns can negatively impact fish and aquatic mollusk habitat by altering stream banks, riparian vegetation and reducing cover for aquatic organisms. Often all three of these conditions exist at the same time and place, reducing the quality of aquatic habitat. These impacts can affect aquatic organisms and their habitats by filling pools with fine sediment, silting in spawning gravels, limiting habitat for macroinvertebrates, reducing undercut banks used for cover, and eliminating overhanging vegetation that provides cover and captures fine sediment during high flows.

Lack of Large Wood

In the Old-Growth Emphasis Area (OGEA), some riparian areas are lacking large overstory trees. Old-growth trees have previously been removed from riparian areas through road-building and timber harvest. Fire exclusion has also resulted in dense stands of small diameter conifer thickets. The lack of large trees in the overstory results in a lack of potential recruitment of in-stream large wood in the future, which provides important benefits to stream structure and aquatic habitat.

Table 2-6. Water Quality Limited Streams on the 2002 303(d) List (ODEQ 2004)

Watershed	Stream Name	Description (River Miles)	Parameter
Jenny Creek	Jenny Creek	0 to 17.8	Temperature-summer
	Johnson Creek	0 to 9.4	Temperature-summer
	Keene Creek	0 to 7.2	Temperature-summer
	Mill Creek	0 to 3.9	Temperature-summer
	South Fork Keene Creek	0 to 3.1	Temperature-summer
Bear Creek	Carter Creek	0 to 4.8	Temperature-summer
	Emigrant Creek	0 to 3.6 and 5.6 to 15.4	Temperature-summer
	Hobart Creek	0 to 0	Temperature-summer
	Tyler Creek	0 to 4	Temperature-summer

PRIMARY MANAGEMENT OBJECTIVES FOR RIPARIAN AREAS

The main goal of riparian area management would be to protect and restore riparian features critical to ecosystem health in order to support the monument's diverse populations of plants and animals. This would be done in accordance with the BLM-wide goal of restoring and maintaining riparian and wetland areas so that they are in proper functioning condition. To achieve these goals, the proposed management activities described in this plan would be designed to meet the following primary objectives:

1) Protect and enhance hydrologic function, aquatic connectivity and water quality.

- Where possible, reduce roads within riparian areas and reduce the number of road/stream crossings.
- Improve road drainage and surfacing, and replace culverts to accommodate at least the 100-year flood.
- Where possible, reduce water withdrawals and increase cold-water inputs.
- Improve riparian and wetland habitats, seeps and springs, and areas with altered hydrologic function.
- Encourage partnerships with local landowners to improve aquatic ecosystems across the landscape.

2) Maintain and improve wetland and riparian plant communities and structure.

- Promote herbaceous and woody-plant development.
- Protect existing late-successional structure in riparian areas.
- Promote the development of late-successional structure where appropriate.
- Reduce the presence and spread of noxious weeds and other non-native species.
- Restore floodplain plant communities, and add large wood to floodplains.
- Where possible, improve, reconstruct, or decommission constructed water sources to allow recovery of the former native plant communities.

3) Protect and enhance riparian areas as habitat for terrestrial and aquatic organisms.

- Protect and enhance riparian and aquatic habitats that favor native species.
- Improve riparian habitat connectivity for aquatic and terrestrial species.
- Restore plant community structure and composition.

PRIMARY MANAGEMENT TOOLS FOR RIPARIAN AREAS

The tools for managing riparian areas overlap with the management tools described in the **Old-Growth Emphasis Area, Diversity Emphasis Area, Transportation and Access, and Livestock Grazing** sections of this document.

Survey/Inventory

The use of surveys and inventories can help to increase the understanding of riparian and aquatic conditions across the monument. Surveys can identify riparian areas where immediate restorative actions are needed.

Planting/Seeding of Native Species

In areas where riparian vegetation has been altered from the historic condition, native grass seeding and the planting of hardwoods and conifers suitable to the site could be used to promote the desired plant community composition and structure.

Thinning in Riparian Areas

Under certain circumstances, thinning in riparian areas could be used to promote late-successional characteristics in riparian areas by removing the small diameter trees that have resulted from fire exclusion. "Thinning from below" is described as a management tool in the **Old-Growth Emphasis Area** section of this chapter.

Reducing Road Density

Road density could be reduced by decommissioning roads that are located in riparian areas. Existing roads and associated stream crossings that cannot be decommisioned due to existing rights-of-way agreements could be improved or relocated.

Fencing

Where other management tools are not feasible, fencing may be used to exclude livestock from streams, springs, seeps, and wetlands where damage is occurring. Fencing can also protect isolated seeps and springs with sensitive species. Fencing may, however, inadvertently limit the mobility and dispersal of native species.

Livestock Management

Cattle are naturally drawn to riparian areas. Various livestock management techniques can be used to distribute cattle across the landscape and minimize time spent in riparian areas. Tools for managing livestock are described in the **Livestock Grazing** section of this chapter.

PROPOSED MANAGEMENT IN RIPARIAN AREAS

The planning team based the following proposed management activities on what is currently known about the existing conditions of riparian areas and aquatic ecosystems. Many of the proposed management activities overlap with the management activities described in the transportation and livestock sections of this document. The monitoring and adaptive management framework described in Appendix C would be an important component of any riparian area management.

Surveys

A Proper Functioning Condition survey (USDI 1993) would be completed to provide a landscape-wide assessment of riparian areas throughout the CSNM. This assessment would be utilized to prioritize riparian areas for restoration activities.

Ongoing monitoring and data collection associated with the Livestock Impact Study would also be used to identify areas in need of immediate restoration activities. Additional surveys and inventories could be conducted as needed.

Restoration and Protection Measures

Restoration and protection activities that benefit aquatic habitat and water quality may be conducted throughout the CSNM. These activities may include, but would not be limited to, planting vegetation in riparian areas, stabilizing stream banks, placing in-stream habitat structures (e.g., logs and boulders), fencing springs and wetlands, altering livestock grazing patterns, removing or replacing culverts, and upgrading or decommissioning roads.

Aquatic Habitat

Streams with the highest priority for aquatic habitat restoration and protection efforts are located in the Jenny Creek Watershed. Throughout the monument, springs and wetlands that contain endemic mollusks would be monitored and protective measures would be taken where necessary.

Past inventories have identified the following areas as priorities for additional evaluation and implementation of restoration activities: (Map 16).

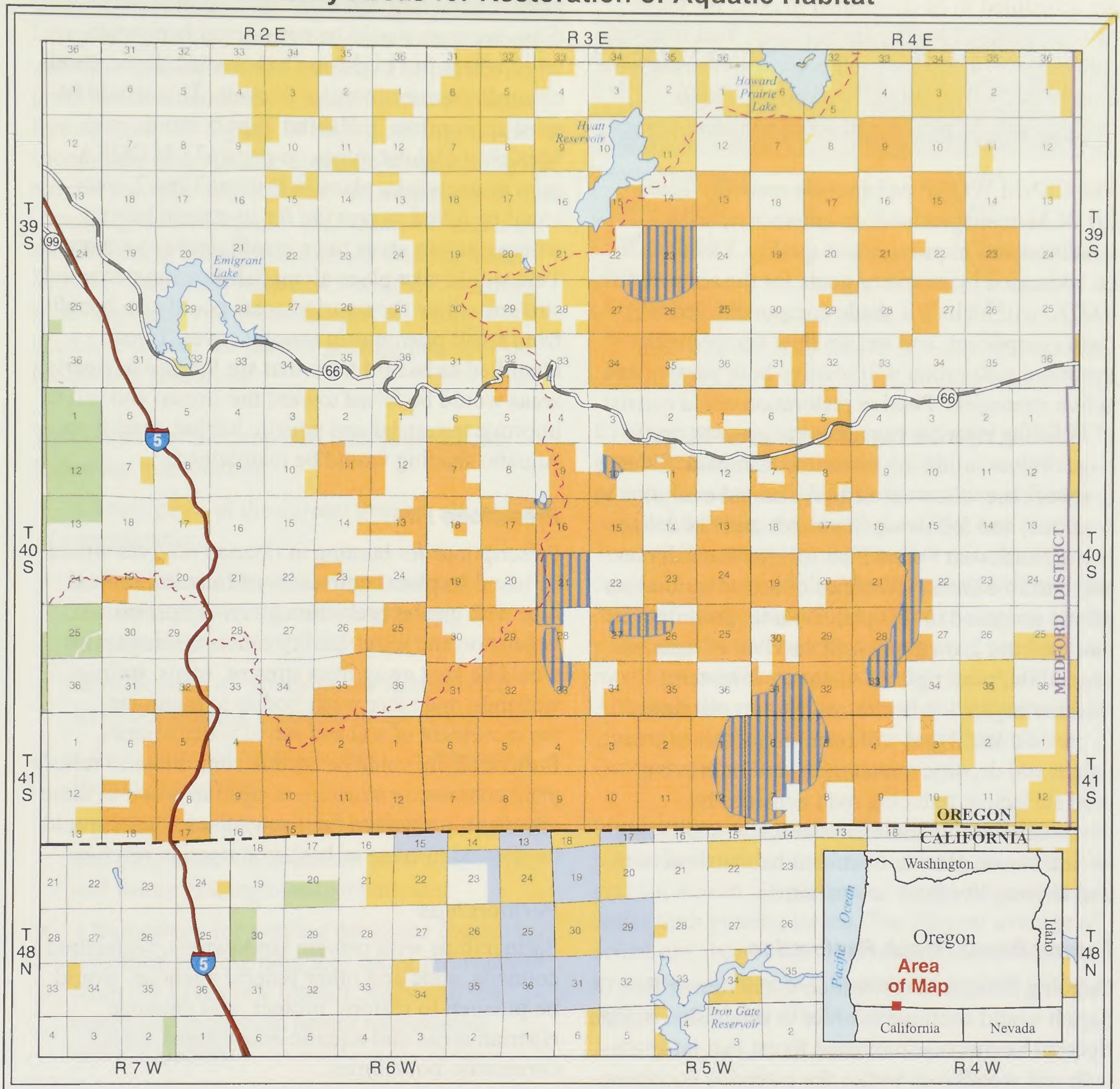
- Area surrounding Hobart Lake
- Keene Creek (outside of canyon)
- Keene Creek Ridge (all springs encountered)
- Jenny Creek (upper and lower portions outside steep-sided canyon)
- Agate Flat (all seeps, springs, and ponds)
- Headwater springs of Camp Creek
- Chinquapin (big meadow with exclosure, isolated springs, and seeps)
- Parsnip Lakes (areas deferred in Medford RMP (USDI 1995))
- Soda Mountain Area (seeps and springs)

Future surveys, such as Proper Functioning Condition Surveys, may identify additional areas as priorities for restoration or protective measures.

Water Quality

A Water Quality Restoration Plan (WQRP) will be prepared to address restoration on water quality limited streams in the monument (Table 2-6). The WQRP will provide a management framework for protecting and enhancing water quality on monument lands. The WQRP will be incorporated into the Oregon Department of Environmental Quality's (DEQ) water quality management plans that are being developed for the Upper Klamath Jenny Creek Watershed and the Middle Rogue Bear Creek Watershed subbasins. These plans

Map 16: Cascade-Siskiyou National Monument
Priority Areas for Restoration of Aquatic Habitat



LEGEND

▥ Priority Restoration Area

- - - - Pacific Crest Trail

— BLM District Boundary

BLM Administered Land

🟧 Cascade-Siskiyou National Monument

🟨 Other

Other Administered Land

🟩 Forest Service

🟨 Bureau of Reclamation

🟦 State

⬜ Private or Other

N
W E
S

1 0 1 2 Miles

1 0 1 2 Kilometers

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will provide implementation strategies for the Total Maximum Daily Loads (TMDLs), which are scheduled to be developed in 2005 for these two subbasins. TMDLs are pollution load limits calculated by DEQ for each pollutant entering a water body. The WQRP will be the TMDL implementation plan for BLM-administered lands.

The CSNM WQRP will include recovery goals for BLM-managed lands to enhance riparian condition and improve water quality. Elements to be addressed by recovery goals for the temperature TMDL will include a shade component, channel form component, and stream flow components. Proposed restoration will involve both passive and active strategies. Passive restoration could consist of allowing riparian vegetation to grow to reach target values, allowing historic streambank failures to revegetate, allowing natural channel evolution to continue, and following Standards and Guidelines in the Northwest Forest Plan for riparian reserves and unstable lands. Examples of active restoration efforts proposed in this plan include: prescriptions that increase growth rate and survival of riparian vegetation, prescriptions to ensure long-term riparian vegetation health, vegetation planting to create a stand that will result in increased tree height and density, maintaining and improving road surfacing, reducing road densities by decommissioning non-essential roads, stabilizing stream banks, placing in-stream habitat structures, and altering livestock use patterns.

Former Box O Ranch Restoration

Ongoing floodplain restoration at the former Box O Ranch would continue in order to establish a mature riparian hardwood-dominated forest that integrates with oak woodlands within the extended floodplain.

Weed Abatement

Riparian areas with weed infestations would be treated following the strategy described in Appendix G. This strategy includes specific mitigating measures for herbicide treatments in or near riparian areas. Weed treatments in riparian areas would be monitored for effectiveness as well as any potential adverse impacts. Only RODEO® (glyphosate) or a product with similar environmental risks would be used.

Thinning

In association with management proposed in the OGEA section of this chapter, thinning small-diameter trees would be considered in riparian areas where fire exclusion has created dense stands of small-diameter conifer thickets. This would be most appropriate in Habitat Type 5 stands (see McKelvie Habitat Types on page 43). If OGEA pilot projects take place in Habitat Type 2, trees could be felled to provide for in-stream habitat where riparian areas have insufficient large wood. This would take place along fish-bearing perennial streams where the riparian areas could also benefit from small openings in canopy cover. Trees identified as hazard trees that are located in riparian areas would be felled toward the stream and left to improve terrestrial and aquatic habitat conditions. Aquatic shading would be maintained.

Prescribed Fire

Prescriptions for burning in riparian reserves would be based on plant community and stream/wetland type with greater protection given to riparian vegetation and water quality concerns. Hand piles would be kept away from streams, seeps, springs, wetlands, and other water bodies to minimize the movement of soil and ash to water sources. Prescribed fire could be used in some areas to restore plant community structure in riparian areas. In these situations, prescribed fire from adjacent units would be allowed to creep or back into riparian reserves.

Partnerships

Partnerships with private landowners, watershed councils, state and other federal agencies would be pursued to restore, protect, and enhance riparian areas and aquatic ecosystems across ownership boundaries.

IMPLEMENTATION CONSIDERATIONS IN RIPARIAN AREAS

Implementation considerations listed in the OGEA and DEA sections of this chapter would be applicable to management in riparian areas where appropriate.

- Treatments within riparian areas should be designed to improve ecological conditions and processes;
- Treatments within riparian areas should be consistent with the ACS objectives.

Livestock Grazing

OVERVIEW

Livestock grazing has continued as an authorized use since monument designation. The presidential proclamation mandated a study of "the impacts of livestock on the objects of biological interest in the monument with specific attention to sustaining the natural ecosystem dynamics." In keeping with this mandate, the *Draft Study of Livestock Impacts on the Objects of Biological Interest* was published in 2001. This study plan describes the objectives, methodologies and protocols that are being used to evaluate the current grazing practices on monument resources.

This section of the proposed plan provides the following information:

- a description of the current grazing allotment organization;
- a description of how existing laws and regulations govern livestock grazing management in the CSNM;
- identification of concerns associated with livestock grazing practices in the monument;
- a description of tools available for managing livestock grazing;
- a proposal for a limited number of site-specific and programmatic decisions regarding current and future grazing management; and
- a framework for making decisions regarding livestock grazing practices using information from the Livestock Impact Study and the upcoming rangeland health assessments and evaluations.

Current Grazing Allotment Organization

Livestock grazing in the monument is organized into nine grazing allotments (Map 17). Two of these allotments, Agate and Siskiyou, are currently vacant. Five of the active allotments, accounting for 97 percent of livestock grazing authorized use in the monument, are managed by the Medford District BLM. The Lakeview District BLM administers the Buck Mountain and Dixie Allotments in the CSNM (Table 2-7). Eleven lessees have active authorized use within the monument on seven allotments.

Table 2-7. Active Grazing Allotments

Active Grazing	Acres of Public Land (within the greater monument boundary)
Soda Mountain	35,264
Keene Creek	10,600
Jenny Creek	1,417
Dixie	1,283
Buck Mountain	739
Box R	88
Deadwood	32

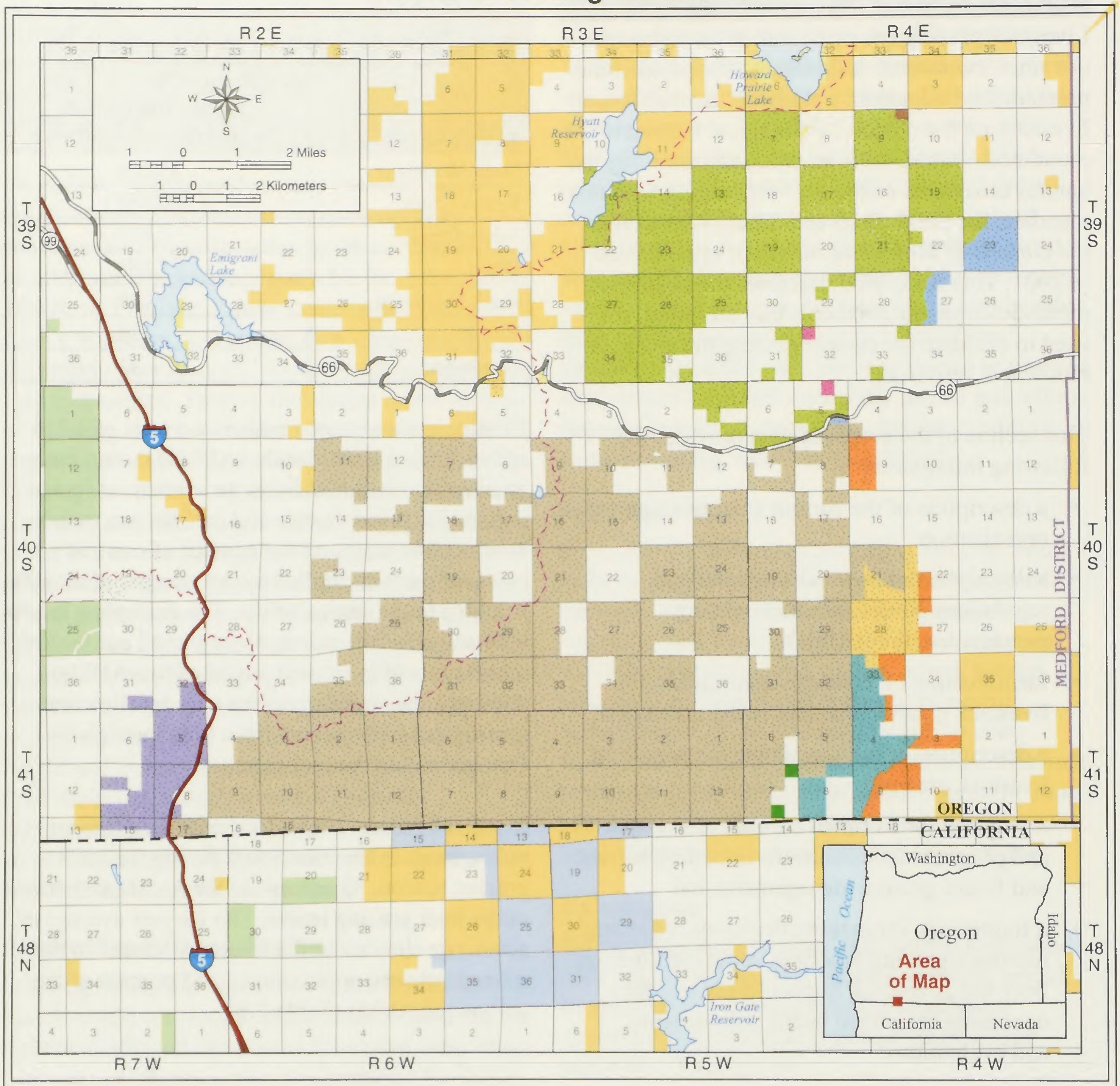
Existing grazing leases authorize a total of 2,714 active Animal Unit Months (AUMs) during the grazing season. An AUM is the amount of forage required to sustain a cow and calf for one month. Total AUMs represent the number of cows or cow/calf pairs multiplied by the number of months included in the season of use. For example a lessee with one cow/calf pair that was turned out for five months would have used a total of five AUMs. Although the grazing seasons vary by allotment, grazing generally occurs from May through October within the monument.

Livestock lessees used a total of 941 AUMs on public lands in the monument during the 2003 grazing season, 35 percent of the AUMs authorized under their grazing leases. The 10-year average of actual use shows that the livestock lessees in the monument used approximately 58 percent of the authorized AUMs (Table 2-8).

LAWS AND REGULATIONS RELATED TO LIVESTOCK GRAZING

The presidential proclamation stated that "Existing authorized permits or leases may continue with appropriate terms and conditions under existing laws and regulations." The primary laws that govern livestock grazing practices on BLM land are the Taylor Grazing Act (TGA) of 1934 and the Federal Land Policy and Management Act (FLPMA) of 1976 as amended by the Public Rangelands Improvement Act of 1978.

Map 17: Cascade-Siskiyou National Monument Livestock Grazing Allotments



LEGEND

Grazing Allotments (BLM Portion)

- 🟦 10103 Buck Mountain (738.78 Acres)
- 🟫 10106 Deadwood (32.18 Acres)
- 🟧 10107 Dixie (1,283.06 Acres)
- 🟦 10108 Jenny Creek (1,417.37 Acres)
- 🟩 10109 Agate (82.21 Acres)
- 🟫 10110 Soda Mountain (35,264.41 Acres)
- 🟩 10115 Keene Creek (10,600.33 Acres)
- 🟪 10118 Siskiyou (1,898.28 Acres)
- 🟥 10137 Box R (87.57 Acres)

- - - - Pacific Crest Trail

— BLM District Boundary

BLM Administered Land

- ▨ Cascade-Siskiyou National Monument
- 🟨 Other

Other Administered Land

- 🟩 Forest Service
- 🟨 Bureau of Reclamation
- 🟦 State
- ☐ Private or Other

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Table 2-8. Allotment Use within the CSNM

Allotment Name	CSNM Public Land Acres	CSNM Authorized Active AUMs	Actual Use										10-Year Average Actual Use
			2003	2002	2001	2000	1999	1998	1997	1996	1995	1994	
Soda Mountain	35,264	1,776	691	728	393	692	1,310	1,052	1,076	1,351	1,207	1,353	986
Keene Creek	10,600	722	131	434	398	470	556	563	492	530	317	140	403
Siskiyou	1,898	VACANT	0	0	0	0	0	0	0	0	0	0	0
Jenny Creek	1,417	115	28	92	112	82	0	0	87	119	106	108	73
Dixie*	1,283	74	73	76	96	Missing Data	94	94	94	96	94	78	88
Buck Mountain	739	19	11	11	11	0	0	0	0	0	0	0	3
Box R	88	5	4	4	4	4	5	5	5	5	4	4	4
Agate	82	VACANT	0	0	0	0	0	0	0	0	0	0	0
Deadwood	32	3	3	3	2	2	3	3	3	3	3	3	3
Total	51,403	2,714	941	1,348	1,016	1,250	1,968	1,717	1,757	2,104	1,731	1,686	1,561

* A Rangeland Health Assessment was conducted on the Dixie Allotment in 2001 and the evaluation determined that one or more standards were not being met and livestock grazing was a contributing factor in non-achievement. Therefore, the active AUMs on the Dixie Allotment were reduced from 96 to 74.

The TGA established a strategy for grazing management intended to "stop injury to the public grazing lands by preventing overgrazing and soil deterioration…." Subsequent to the TGA, 65 million acres of public land deemed "chiefly valuable for grazing and raising forage crops" were placed in grazing districts. Grazing districts in Oregon were created exclusively on the east side of the Cascades and did not include lands that are now part of the CSNM. Section 15 of the TGA allows the issuance of grazing leases on public lands outside the original grazing district boundaries. Grazing leases in the monument were issued under Section 15 of the TGA.

In 1976 Congress enacted FLPMA, making fundamental changes to the management of public lands overall, including grazing management. FLPMA did not distinguish between the administration of lands included in the original grazing districts and those leased under Section 15. Regulations regarding the administration of grazing on BLM lands are found in Volume 43 Code of Federal Regulations (CFR) Subpart 4100. Livestock grazing management in the monument would ensure that (1) the intent of the presidential proclamation is being met, and (2) that BLM regulations for managing livestock grazing are followed.

The Presidential Proclamation

The presidential proclamation provides the following direction in regards to livestock grazing:

> The Secretary of the Interior shall study the impacts of livestock grazing on the objects of biological interest in the monument with specific attention to sustaining the natural ecosystem dynamics. Existing authorized permits or leases may continue with appropriate terms and conditions under existing laws and regulations. Should grazing be found incompatible with protecting the objects of biological interest, the Secretary shall retire the grazing allotments pursuant to the processes of applicable law. Should grazing permits or leases be relinquished by existing holders, the Secretary shall not reallocate the forage available under such permits or for livestock grazing purposes unless the Secretary specifically finds, pending the outcome of the study, that such reallocation will advance the purposes of the proclamation.

The presidential proclamation directed the BLM to "study the impacts of livestock on the objects of biological interest in the monument with specific attention to sustaining the natural ecosystem dynamics." The BLM has since developed the *Draft Study of Livestock Impacts on the Objects of Biological Interest* (Livestock Impact Study), which includes multiple projects designed to determine and quantify the effects of livestock grazing on these objects and ecosystem processes.

The mandate to study the impacts of livestock grazing is also a call to consider ecosystem dynamics (change over time) and ecosystem integrity (whether all the components of the ecosystem are present and functioning). This requires the BLM to consider the biological objects and ecosystem variables relative to the range of processes occurring within the CSNM landscape. The monitoring of indicator species and variables indicative of ecosystem functioning is critical to understanding the health of the ecosystems within the monument.

The proclamation also stated that "Should grazing be found incompatible with protecting the objects of biological interest, the Secretary shall retire the grazing allotments pursuant to the processes of applicable law." The results of the livestock studies will, therefore, be used to help determine whether or not livestock grazing is compatible with "protecting the objects of biological interest."

Current Grazing Regulations

Current grazing regulations (43 CFR 4180) direct the BLM to manage livestock grazing in accordance with the "Standards for Rangeland Health and Guidelines for Livestock Grazing Management for Public Lands in Oregon and Washington" (Appendix I).

The Standards and Guidelines identify five specific standards that are used to determine the degree to which "ecological function and process exists within each ecosystem." Standards address the health, productivity, and sustainability of the BLM-administered public rangelands and represent the minimum acceptable conditions for the public rangelands. The guidelines are management practices that will either maintain existing desirable conditions or move rangelands toward statewide standards within reasonable timeframes. The five specific standards are defined as follows:

Standard 1 – Watershed Function, Uplands: Upland soils exhibit infiltration and permeability rates, moisture storage, and stability that are appropriate to soil, climate, and landform.

Standard 2 – Watershed Function, Riparian/ Wetland Areas: Riparian/wetland areas are in properly functioning physical condition appropriate to soil, climate, and landform.

Standard 3 – Ecological Processes: Healthy, productive and diverse plant and animal populations and communities appropriate to soil, climate, and landform are supported by ecological processes of nutrient cycling, energy flow, and the hydrologic cycle.

Standard 4 – Water Quality: Surface water and groundwater quality, influenced by agency actions, complies with state water quality standards.

Standard 5 – Native, Threatened and Endangered, and Locally Important Species: Habitats support healthy, productive, and diverse populations and communities of native plants and animals (including special status species and species of local importance) appropriate to soil, climate, and landform.

The Standards and Guidelines (Appendix I) also specify a set of potential indicators for use when determining whether or not standards are being met. The Livestock Impact Study has been designed to provide information regarding many of these potential indicators. In addition to the Standards and Guidelines, it may be necessary to use other site-specific or species-specific indicators to determine "the impacts of livestock grazing on the objects of biological interest in the monument." The results of the Livestock Impact Study will be used in conjunction with other available data to determine whether or not the grazing standards are being met by current grazing practices.

PRIMARY MANAGEMENT CONCERNS RELATED TO LIVESTOCK GRAZING

A list of concerns and questions identified are presented below. They are based on quantitative and qualitative analyses, an extensive literature review, and site-specific knowledge regarding areas that are currently utilized by livestock. As described above, the BLM has initiated multiple studies of potential livestock impacts on monument resources. These studies will continue to provide quantitative data regarding the impacts from livestock on the "objects of biological interest with specific attention to sustaining the natural ecosystem dynamics." Ongoing monitoring, data collection, and analysis will help to answer some of the outstanding questions regarding the role that livestock grazing plays in some of the existing conditions throughout the monument.

Noxious Weeds

The spread of noxious weeds is a problem throughout the monument, particularly in the Diversity Emphasis Area (DEA). Livestock are one vector associated with the spread of noxious weeds: livestock disturbance may increase site receptiveness to noxious weed invasions; and livestock movement through areas may also contribute to weed spread. To what extent do livestock, as compared to other historic or current disturbance factors, contribute to the introduction and/or spread of noxious weeds and undesirable non-native species in the monument?

Riparian and Wetland Areas

Riparian and wetland areas are the most productive and highly prized resources found on public lands in the monument. These areas play a significant role in restoring and maintaining the chemical, physical, and biological integrity of water sources (USDI 1994a). Monitoring of livestock use over the past few years has identified areas of use that exceed moderate levels (greater than 60 percent use of key forage species) within riparian areas. Livestock use patterns and associated trampling (hoof action) may be impacting the functionality of some riparian and wetland areas and impeding attainment of the Aquatic Conservation Strategy (ACS) in these areas. To what extent are livestock, as compared to other historic or current disturbance factors, impacting streams, springs, seeps, and wetlands or affecting aquatic organisms, including sensitive aquatic mollusk and fish species?

Springs, seeps, and wetlands have also been affected as a consequence of altered hydrology. Range facilities (the creation of stock ponds) and associated roads have altered the flow of water and may have deprived historic wetlands of water; they may have also inadvertently created and maintained new wet areas. How does the distribution of livestock facilities across the landscape, as compared to other historic or current disturbance factors, alter the monument's hydrologic systems?

Wildlife Habitat

Cattle use the landscape and forage resources differently than do the native ungulates. As a result, the effects of cattle herbivory on ecosystem processes are different from those of native ungulate herbivory. Cattle can reduce the forage available for native species, and can reduce ground cover that may serve as habitat for various species. What effects do livestock, as compared to other historic or current disturbance factors, have on important wildlife habitats, including black-tailed deer winter range, native ground nesting birds, and rare or special status animal species?

Ecological Succession and Plant Community Composition

The literature indicates that direct and indirect livestock impacts can influence plant composition and, consequently, the relative abundance of weeds. Livestock preference for certain species and the plant's ability to withstand grazing can change the competitive balance between species, resulting in livestock-induced changes to the ecological state and successional processes. What role does livestock grazing play in changing the vegetation community composition and structure, or in the maintenance of the existing annual/perennial grass ratios?

Special Status Species

Unique populations of native plant and animal species are an important part of the monument's ecology. Cattle grazing can influence populations of these rare objects, either directly from grazing or trampling, or indirectly from the successional changes described above. How are current livestock grazing practices affecting the recovery of rare, threatened, endangered, special status or native species populations?

Water Quality

There are nine streams in the CSNM currently listed as water quality limited for temperature (summer) by the Oregon Department of Environmental Quality's 2002 303(d) list. Grazing by ungulates can directly affect stream temperature through the alteration, reduction, or elimination of streamside vegetation that shades the stream. Indirectly, livestock grazing can widen stream channels through stream bank erosion from trampling, hoof-slide, and stream bank collapse. Stream widening reduces stream depth and increases the surface area of the water exposed to solar radiation leading to higher water temperatures. To what extent are current livestock grazing practices, as compared to other historic or current disturbance factors, contributing to high summer temperatures in these streams?

PRIMARY MANAGEMENT TOOLS FOR LIVESTOCK GRAZING

Livestock administration in the CSNM would be designed to manage the season, timing, frequency, duration, and intensity of livestock grazing in order to meet the Standards for Rangeland Health and the needs of the ecological components described above. The following tools provide the BLM with a variety of options for meeting the directives found in the presidential proclamation and the Standards and Guidelines. Additional guidelines for managing grazing leases are found in Appendix I.

Adjust Grazing Systems

The season, timing, frequency, duration, and intensity of livestock grazing use should be based on the physical and biological characteristics of the site. A grazing system may be adjusted or modified to a different system when conditions indicate that the current system may result or has resulted in over-utilization or other negative impacts. Some examples of grazing systems include continuous, deferred, rotational, rest-rotational, complete rest (short- or long-term), split season, and high-intensity, short-duration livestock use.

Pasture Divisions

Grazing allotments may be divided into pastures to achieve proper distribution of cattle and reduce grazing pressure in over-utilized areas. Pasture divisions are maintained using fencing or natural barriers in order to change the grazing pressure exerted on a particular area.

Season-of-Use Adjustments

Grazing on the CSNM takes place during the spring, summer, and fall. Livestock grazing should be coordinated with the timing of precipitation, plant growth, and plant form. Soil moisture, plant growth stage and the timing of peak stream flows are key factors in determining when to graze. Adjusting seasons in pastures can provide periods of rest so that native plants can have time to complete their growth cycle and renew the seedbank. Season-of-use adjustments can also provide a competitive advantage for desirable species and a disadvantage to undesirable species. Season-of-use adjustments may also be used to take advantage of time frames when plants have higher nutritive values that promote better weight gains in livestock.

Distribution

Authorized livestock lessees are responsible for the appropriate distribution of cattle. There are many different ways to achieve desired livestock distribution. Livestock lessees can employ cattle herding by horseback or other means. Salt blocks can be placed to attract livestock away from water or other important features (biological, archaeological, etc.). Salt blocks can also be placed to favor livestock grazing on undesired noxious weeds or to break up dense shrubs.

Adjustments to Turn-out and Take-off Dates

Rangeland readiness determines the dates that animals are allowed to be turned out or required to be taken off an allotment or pasture. Rangeland readiness for turn-out is determined through an evaluation of soil moisture, plant phenology (vegetative growth stage), and a number of other factors specific to each allotment or pasture. Similarly, take-off dates are influenced by levels of utilization, drought, soil moisture, and other relevant criteria.

Adjustments to AUM Authorizations

The primary method of authorizing forage use in a grazing lease is through the designation of AUMs (estimated livestock carrying capacity). Adjusting AUM authorizations provides a means of adjusting animal numbers over time. A lessee can request "nonuse" on an annual basis for personal reasons such as financial concerns, fluctuations in the livestock industry, or personal health issues. When requested and approved, nonuse can provide for a period of rest on an allotment.

Special Use Permits

According to the federal grazing regulations, a number of special use permits (e.g., Free-Use Grazing Permits, 43 CFR 4130.5) may be authorized to accomplish grazing that promotes various ecological processes. An example would be authorizing limited grazing to utilize undesirable species and promote improvements in desired species.

Rangeland Improvements

Rangeland improvement projects are designed to maintain or improve ecological conditions and/or increase the efficiency of range management. Some examples of rangeland improvements are fencing, water developments, seeding of desirable plant species, brush thinning, etc.

Allotment Management Plans

Allotment Management Plans (AMPs) (43 CFR 4120.2) direct the management of livestock grazing on the specified allotment. The AMP is the implementation document by which the BLM, in cooperation with the grazing lessees, other federal and state resource management agencies, and interested citizens, develops management objectives and associated site-specific actions that are based on meeting the Oregon Standards for Rangeland Health (Appendix I). AMPs employ many of the tools described above, including monitoring plans to evaluate effectiveness.

PRIMARY MANAGEMENT OBJECTIVES FOR LIVESTOCK GRAZING

Livestock grazing continues as an authorized use in the monument. The main objective for livestock management is to administer grazing allotments under existing laws and regulations to achieve land health standards and in the manner that protects "the objects of biological interest" and complements other resource objectives identified in this document. Specific attention would be given to resolving the concerns and questions identified above (**Management Concerns** section). This management plan proposes a limited number of programmatic and site-specific decisions regarding current and future grazing management. It also establishes a framework for making future decisions regarding livestock grazing practices. These are discussed below.

PROPOSED MANAGEMENT FOR LIVESTOCK GRAZING

Programmatic and Site-Specific Decisions

Authorized Livestock Operations

Authorized livestock lessees need some degree of access for livestock management and maintenance of fences, stock ponds, and other improvements. Livestock operations may be affected by proposed management activities, such as vegetation management, road closures, and prescribed burning. The BLM will continue to work with the monument's grazing lessees in order to coordinate proposed management activities with livestock operations. In cooperation with authorized livestock lessees, grazing management practices will be applied within existing lease terms and conditions to be proactive in protecting or enhancing monument resources; a variety of livestock management techniques will be utilized to accomplish these practices and are described in the Management Tools section.

Livestock Facilities

Ground disturbing activities and the construction of new livestock facilities—including watering developments, corrals, and chutes—would not be authorized unless the assessment/evaluation process described below leads the deciding officer to conclude that they are necessary to protect or enhance monument resources.

Access

The use of roads for livestock operations will be limited to designated open roads and be consistent with the CSNM transportation management plan, except where permitted by the monument manager (Map 18).

Existing Vacant Allotments

The Siskiyou and Agate Allotments are currently vacant. These allotments will be evaluated with current monument grazing leases to determine "the impacts of livestock on the objects of biological interest in the monument." Applications for new grazing leases or other grazing authorizations, including nonrenewable grazing use, would not be approved on vacant allotments until after completion of the assessment, evaluation, and NEPA process described below. The results of the livestock studies will be used to determine whether or not livestock grazing is "incompatible with protecting the objects of biological interest," consistent with the presidential proclamation.

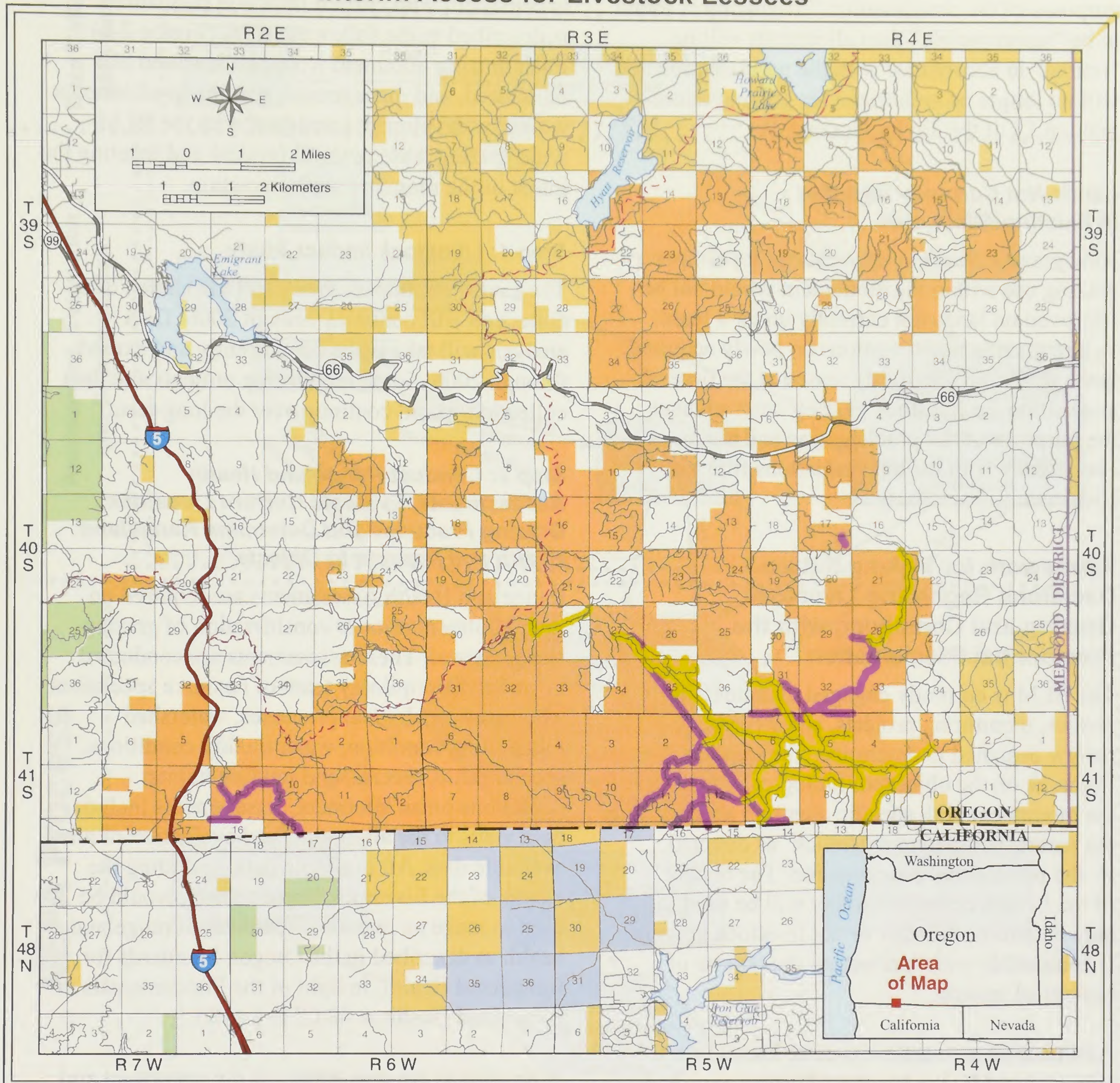
Lease Renewals

Under existing law (Public Law 108-108, Section 325), grazing leases that expire, are transferred, or waived during fiscal years 2004-2008 prior to the completion of the lease renewal process would be renewed. The existing terms and conditions of these leases will continue in effect until the lease renewal process can be completed in compliance with all applicable laws and regulations. During the lease renewal process, the lease may be canceled, suspended, or modified, in whole or in part, to meet the requirements of such applicable laws and regulations.

Allotment Retirement

The presidential proclamation addressed the retirement of existing allotments in the following manner: "Should grazing be found incompatible with protecting the objects of biological interest, the Secretary shall retire the grazing allotments pursuant to the processes of applicable law. Should grazing permits or leases be relinquished by existing holders, the Secretary shall not reallocate the forage available under such permits or for livestock grazing purposes unless the Secretary

Map 18: Cascade-Siskiyou National Monument Interim Access for Livestock Lessees



LEGEND

Interim Access

- ▬ OHV Use Only
- ▬ Road Use by Authorization Only
- — Road
- - - - Pacific Crest Trail
- — BLM District Boundary

BLM Administered Land

- 🟧 Cascade-Siskiyou National Monument
- 🟨 Other

Other Administered Land

- 🟩 Forest Service
- 🟨 Bureau of Reclamation
- 🟦 State
- ⬜ Private or Other

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specifically finds, pending the outcome of the study, that such reallocation will advance the purposes of the proclamation." If grazing is found to be "incompatible" then allotments will be "retired" in accordance with the proclamation and will no longer be authorized for grazing under Section 15 of the Taylor Grazing Act.

Lands Not Currently Included in Existing Allotments

New grazing leases or applications for temporary grazing use within the monument would not be approved on lands not currently under a lease. Future grazing authorizations on newly acquired lands that were previously leased at the time of acquisition for livestock grazing must advance the purposes of the proclamation and assure consistency with the determinations from the Livestock Impact Study.

Framework for Making Future Decisions Regarding Livestock Grazing and Complying with the Presidential Proclamation

The BLM is currently engaged in conducting studies, monitoring projects, and a literature review designed to determine "the impacts of livestock on the objects of biological interest in the monument with specific attention to sustaining the natural ecosystem dynamics" as directed by the presidential proclamation. The results of the Livestock Impact Study will be used to help determine whether or not livestock grazing is compatible with "protecting the objects of biological interest."

Additionally, monument grazing leases administered by the Medford District expire in 2006. Under Public Law 108-108, Section 325, leases that expire prior to fiscal year 2009 are renewed automatically with the same terms and conditions of the expiring lease until completion of the appropriate level of environmental analysis required under NEPA. The environmental analysis is preceded by a Rangeland Health Assessment of grazing allotments and an evaluation to determine whether or not they are meeting the Oregon Standards and Guidelines for Rangeland Health (Appendix I) and other applicable guidelines.

The process for determining if livestock grazing is compatible with "protecting the objects of biological interest" and evaluating the allotments for lease renewal to ensure that livestock grazing is consistent with current laws and regulations is described in the following steps (Figure 2-1). Each grazing allotment would be assessed and monitored, and management specific to allotments would be developed, consistent with the BLM-wide grazing lease renewal process and meeting the intent of the monument proclamation.

Step 1: Livestock Impact Study

The Livestock Impact Study and associated data collection will continue through 2006. Data analysis will take place concurrently and extend through 2006. Some monitoring projects and data collection would continue over the long-term.

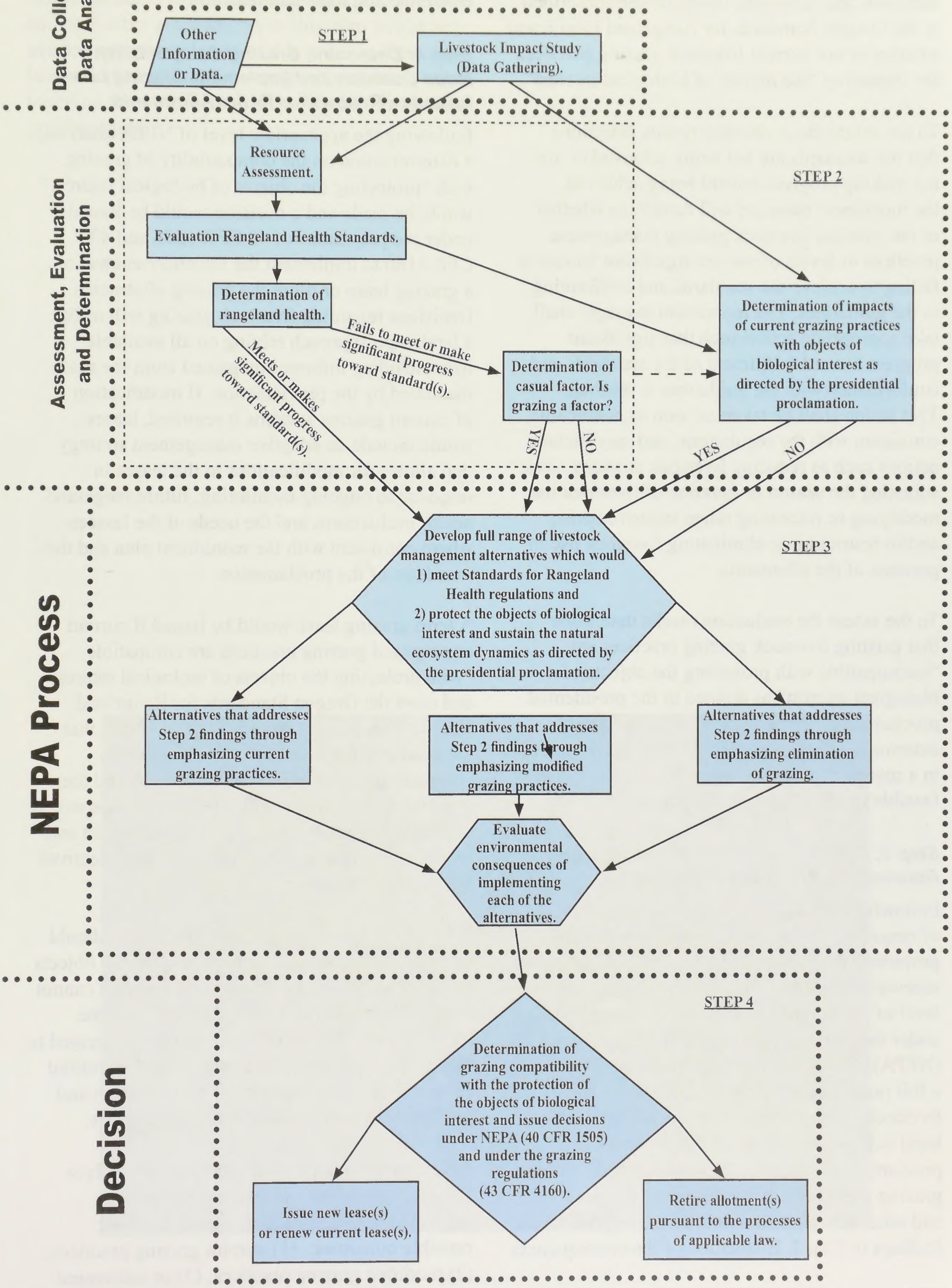
Step 2: Conduct Rangeland Health Assessments, Evaluate Current Livestock Grazing Practices and Determine Rangeland Health and Impacts to Objects

Rangeland Health Assessments are required on each allotment prior to consideration of grazing lease renewal. These assessments are conducted by an interdisciplinary team of resource specialists who assess ecological processes, watershed functioning condition, water quality conditions, special status species, and wildlife habitat conditions on an allotment. Assessments include field visits to the allotments and evaluation of all available data. All available data, including the results of the Livestock Impact Study, would be used to make an overall assessment of rangeland health as described in the Oregon Standards for Rangeland Health, in light of the Fundamentals of Rangeland Health at 43 CFR § 4180.1.

Assessments are appropriate at the watershed and subwatershed levels, at the allotment and pasture levels, and on individual ecological sites or groups of sites. Monitoring, which is the well-documented and orderly collection, analysis, and interpretation of resource data, serves as the basis for making determinations of rangeland conditions and trends and for making management decisions. In cases where monitoring data do not exist, professional judgment, supported by interdisciplinary team recommendations, may be relied upon by the authorized officer in order to take necessary action.

The monument manager (authorized officer) will use the assessment described above to determine

Figure 2-1. Process for assessing rangeland health and determining livestock compatibility with the objects of biological interest.


Data Collection
Data Analysis
STEP 1
Other Information or Data.
Livestock Impact Study (Data Gathering).
Assessment, Evaluation and Determination
Resource Assessment.
STEP 2
Evaluation Rangeland Health Standards.
Determination of rangeland health.
Fails to meet or make significant progress toward standard(s).
Meets or makes significant progress toward standard(s).
Determination of casual factor. Is grazing a factor?
Determination of impacts of current grazing practices with objects of biological interest as directed by the presidential proclamation.
YES
NO
YES
NO
NEPA Process
STEP 3
Develop full range of livestock management alternatives which would 1) meet Standards for Rangeland Health regulations and 2) protect the objects of biological interest and sustain the natural ecosystem dynamics as directed by the presidential proclamation.
Alternatives that addresses Step 2 findings through emphasizing current grazing practices.
Alternatives that addresses Step 2 findings through emphasizing modified grazing practices.
Alternatives that addresses Step 2 findings through emphasizing elimination of grazing.
Evaluate environmental consequences of implementing each of the alternatives.
Decision
STEP 4
Determination of grazing compatibility with the protection of the objects of biological interest and issue decisions under NEPA (40 CFR 1505) and under the grazing regulations (43 CFR 4160).
Issue new lease(s) or renew current lease(s).
Retire allotment(s) pursuant to the processes of applicable law.

whether or not current livestock grazing practices within the monument allotments are meeting the standards and following the guidelines described in the Oregon Standards for Rangeland Health and whether or not current livestock grazing practices are impacting "the objects of biological interest".

To the extent the evaluation results determine that the standards are not being achieved or are not making progress toward being achieved, the monument manager will determine whether or not existing livestock grazing management practices or levels of use are significant factors in failing to achieve the standards and conforming to the guidelines. The monument manager shall take appropriate action such that significant progress toward fulfillment of the standards and conformance with the guidelines is reached. This action shall be taken as soon as practicable, consistent with the regulations, and may include actions such as reducing livestock stocking rates; adjusting the season or duration of livestock use; modifying or relocating range improvements; and/or restricting or eliminating livestock use in portions of the allotments.

To the extent the evaluation results determine that existing livestock grazing practices are "incompatible with protecting the objects of biological interest" as defined in the presidential proclamation, the monument manager will determine whether or not practices can be modified in a manner that is economically and logistically feasible to achieve compatibility.

Step 3: Follow the NEPA Process for Lease Renewals or Allotment Retirements

Following the evaluation and determination of rangeland health and compatibility "with protecting the objects of biological interest", lease renewals would be subject to the appropriate level of environmental analysis as prescribed under the National Environmental Policy Act (NEPA). The NEPA analysis would develop a full range of management alternatives for livestock grazing consistent with all applicable legal authorities, including the presidential proclamation. Alternatives would include current grazing management, a no-grazing alternative, and other alternatives developed to respond to the findings in Step 2. Evaluation of the consequences of implementing each alternative would include consideration of the social impacts, as well as the economic and logistical feasibility.

Step 4: Determine Grazing Compatibility, Issue Decision and Implement Grazing Lease Issuance/Renewal or Retire Allotments

Following the appropriate level of NEPA analysis, a determination on the compatibility of grazing with "protecting the objects of biological interest" would be made and a decision would be issued under the provisions of 40 CFR 1505 and 43 CFR 4160 to implement the issuance/renewal of a grazing lease or retire the grazing allotments. Decisions regarding livestock grazing will utilize a landscape approach relying on all available data including information gained from the study mandated by the proclamation. If modification of current grazing systems is required, leases would include an adaptive management strategy that allows for modifications to the leases in response to ongoing monitoring, future rangeland health evaluations, and the needs of the lessees where consistent with the monument plan and the mandates of the proclamation.

A term grazing lease would be issued if current or proposed grazing practices are compatible "with protecting the objects of biological interest" and meet the Oregon Standards for Rangeland Health. This process would designate lands that are available for livestock grazing based on compatibility with monument resources and the objects of biological interest. Grazing leases would specify the types and levels of use authorized and would define quantifiable, time-specific objectives for meeting standards.

If livestock grazing on specific allotments should be found "incompatible with protecting the objects of biological interest," and grazing systems cannot be modified to achieve compatibility, or if the BLM determines that the lands are best allocated to other purposes, those allotments would be retired as specified in the presidential proclamation and applicable laws, regulations, and procedures.

Although this plan does not propose or analyze site-specific changes to grazing, the process described in this document allows for three possible outcomes: (1) current grazing practices; (2) modified grazing practices; (3) or retirement of allotments. Future site-specific planning would include the appropriate level of NEPA analysis and would be tiered to this resource management plan and no further amendments to this plan would be needed upon completion of this process. Thus, this land-use plan allows for a range of options to occur based on finer-scale data, including the mandated grazing study.

Transportation and Access

OVERVIEW

The transportation system provides access throughout the monument to points of interest, resource management areas, and other public and private lands. The BLM identifies approximately 463 miles of road (including closed and open roads) on the 85,126 acres of public and private land within the greater monument boundary (Map 19). Roads in the monument vary from primitive four-wheel drive (jeep) roads to paved highways. Mileage estimates are generally conservative, as not all private roads or non-inventoried roads are in the BLM database. Of this 463-mile total, the BLM controls approximately 246 miles of road.

Roads associated with the monument are controlled or owned by the BLM, timber companies, Jackson County, the State of Oregon, and many private landowners. These roads are managed in a variety of ways. For example, although the BLM provides the capital investment and maintenance on BLM-controlled roads, the BLM may not necessarily own the property where the road is located. In most areas the BLM and other large property owners have reciprocal agreements that allow access for forest management activities (Map 20), but do not provide for public access. Across many private lands, the BLM has acquired exclusive road easements which allow for public access to federal lands. In other cases, the BLM has acquired non-exclusive easements for administrative access only. This type of easement does not include rights for the public to access federal lands.

BLM-controlled roads are generally open for vehicle use by the public unless posted closed with signs or blocked by gates or other barriers. Some roads have been legally closed through a notice in the Federal Register. These roads may not have barriers other than signs, but use of these roads is prohibited by regulation. Of the 246 miles of BLM-controlled roads, approximately 90 miles are closed year-round and 37 miles are closed seasonally (Map 19). In addition, 13 miles of road have been decommissioned. Most of these roads were closed or decommissioned subsequent to the 1995 Medford District Resource Management Plan. The Schoheim Road and some associated road segments were closed subsequent to monument designation in 2000.

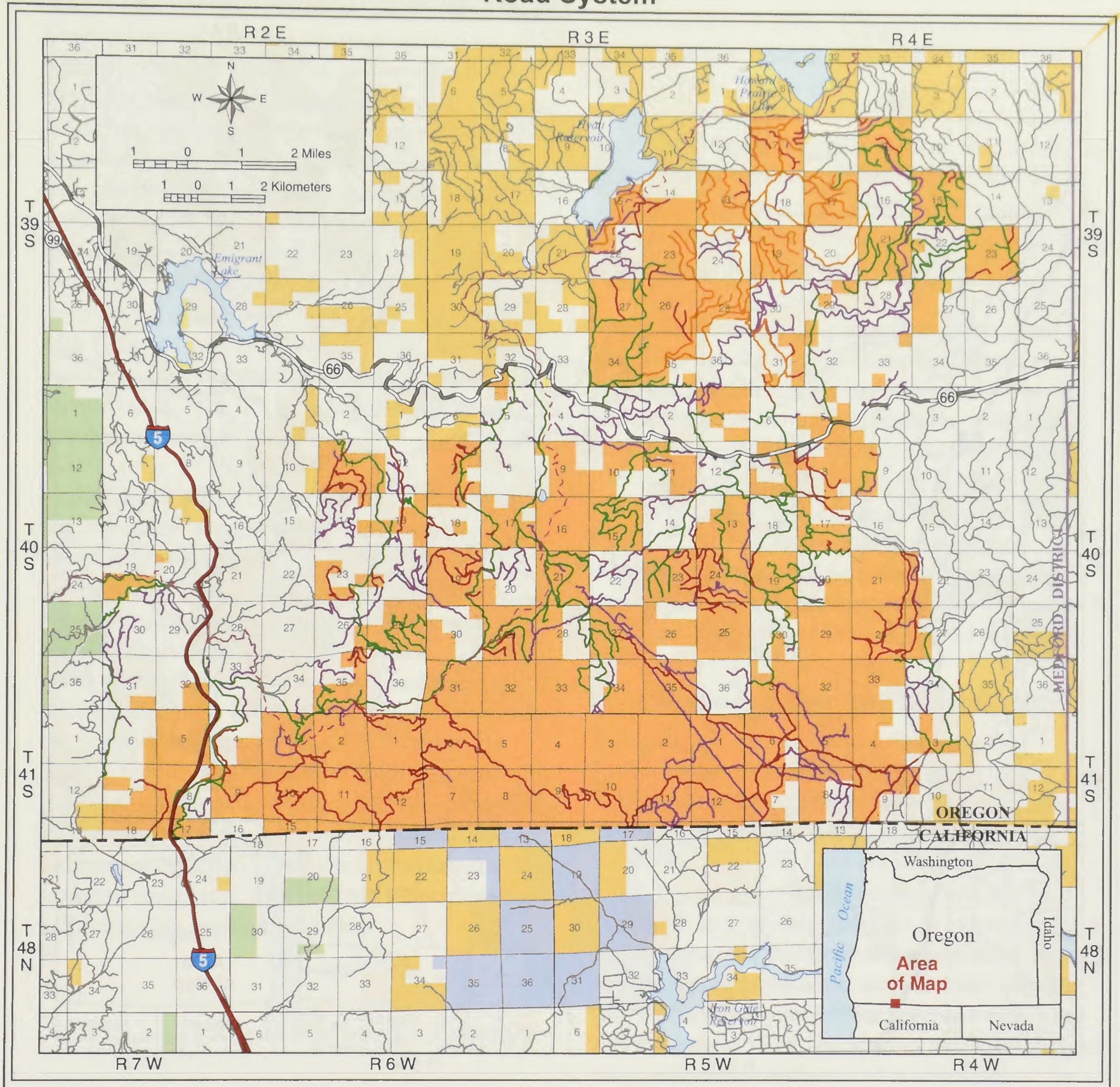
Road densities on BLM lands throughout the monument range from 2.37 miles per square mile (mi./mi.^{2}) in the DEA to 4.12 mi./mi.^{2} in the OGEA (Table 2-9). Road densities are calculated for BLM lands within the monument as well as for all lands within the greater monument boundary. Road density calculations are based on all roads that are currently in the BLM database. Calculations of road density include roads on both public and private lands in order to assess the cumulative impacts of roads at the watershed and landscape scales.

Table 2-9. Road Densities within the Cascade-Siskiyou National Monument (Includes Open and Closed Roads, but Excludes Previously Decommissioned Roads)

Item	Miles of Road*	Area (mi.^{2})	Road Density (mi./mi.^{2})
All lands within Greater CSNM Boundary	462.76	133.01	3.48
BLM lands within Greater CSNM Boundary	266.38	82.71	3.22
Old Growth Emphasis Area (OGEA) (BLM lands only)	163.21	39.59	4.12
Diversity Emphasis Area (DEA) (BLM lands only)	102.16	43.14	2.37
All lands within Jenny Creek (Tier 1 Key Watershed) in CSNM	288.16	74.88	3.86
BLM lands within Jenny Creek (Tier 1 Key Watershed) in the CSNM	167.82	45.45	3.69

*Road miles are calculated using the BLM GIS database, and are rounded up in the text of this section.

Map 19: Cascade-Siskiyou National Monument Road System



LEGEND

Closure Status

- Private or Unknown
- Open
- Seasonally Closed
- Closed
- Road Outside Greater Cascade-Siskiyou National Monument Boundary
- - - - - Pacific Crest Trail
- BLM District Boundary

BLM Administered Land

- 🟧 Cascade-Siskiyou National Monument
- 🟧 Other

Other Administered Land

- 🟩 Forest Service
- 🟨 Bureau of Reclamation
- 🟦 State
- ⬜ Private or Other

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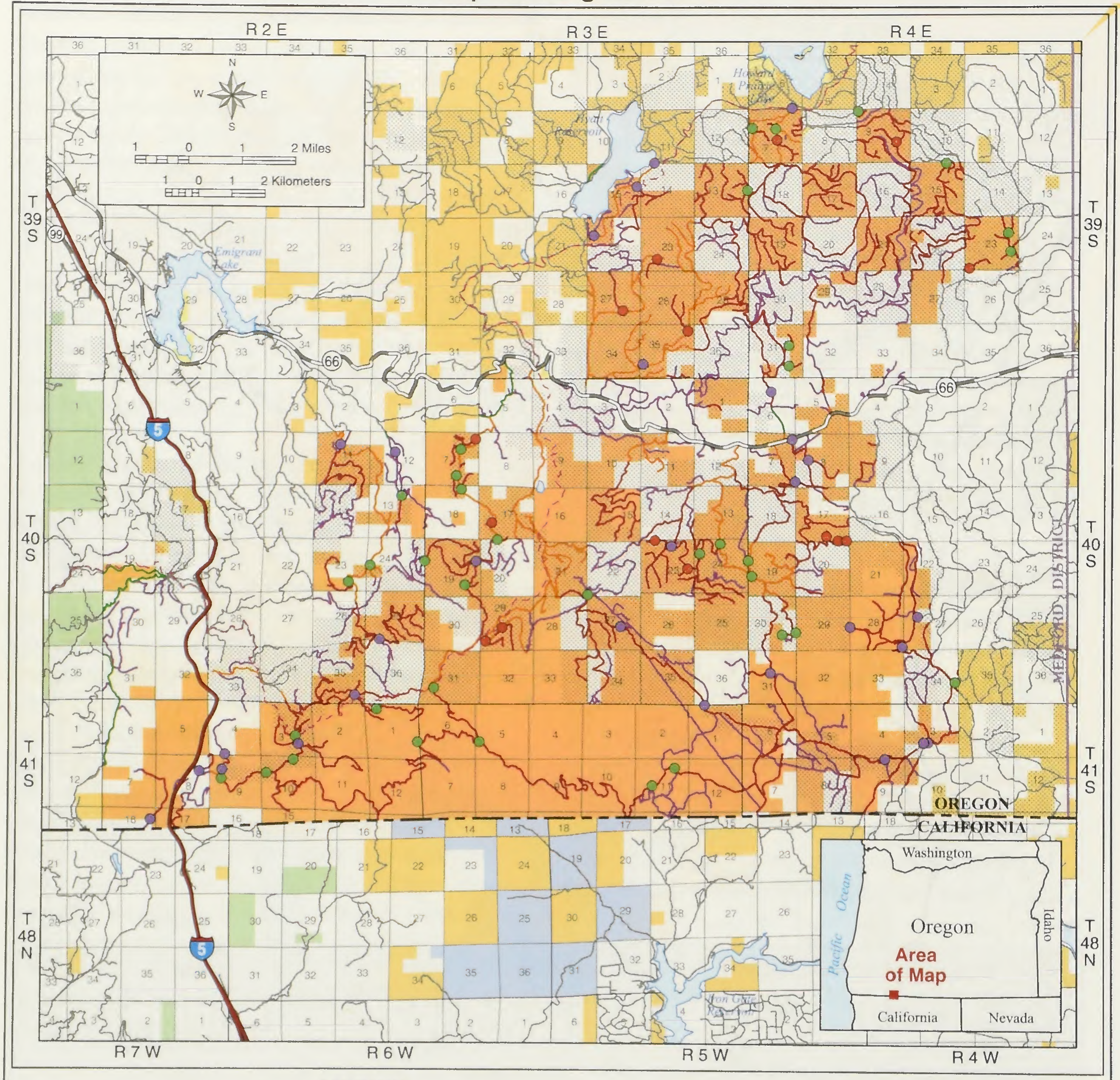
Map 20: Cascade-Siskiyou National Monument Reciprocal Agreements



LEGEND

Access

- Private or Non-Inventoried Road
- BLM Access Road (No Public Access)
- BLM and Public Access Road
- County Road (Public Access)
- Road Outside Greater Cascade-Siskiyou National Monument Boundary
- Pacific Crest Trail
- BLM District Boundary

Closure Device

- ● Earth Berm
- ● Guard Rail
- ● Gate

▨ Reciprocal Agreement

BLM Administered Land

- 🟧 Cascade-Siskiyou National Monument
- 🟨 Other

Other Administered Land

- 🟩 Forest Service
- 🟨 Bureau of Reclamation
- 🟦 State
- ☐ Private or Other

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PRIMARY MANAGEMENT CONCERNS FOR TRANSPORTATION

The road network within the monument was primarily designed to access and remove timber products. Many of these existing roads are no longer necessary for timber management activities on public lands, but still require maintenance and may be associated with adverse affects on ecological systems. To reduce maintenance requirements and adverse impacts associated with roads, some unnecessary roads have been, or could be, decommissioned. However, roads with rights-of-way (ROWs) grants or those under reciprocal agreements that provide access to private lands, may not be permanently closed or decommissioned.

Management of the BLM road network within the monument must consider the protection of natural resources, including the "objects of biological interest"; access for recreation and resource management; access requirements of adjacent landowners; and fire suppression access needs on BLM lands, as well as on adjacent public and private lands. Extensive road networks can result in negative impacts on wildlife and aquatic species and habitats; impaired hydrologic function; introduction and spread of exotic species; reductions in site productivity; and increased sediment production. The primary management concerns associated with the road network in the monument are highlighted below.

Terrestrial Wildlife and Associated Habitats

Roads facilitate human access and the subsequent disturbance to wildlife. Problems range from noise disturbance of nesting birds to game poaching and shooting of non-game species. Roads also result in accidental deaths from vehicle/animal collisions. Roads fragment wildlife habitat, disrupt connectivity between habitat patches, and create ecological edges. Snags, essential components of forested habitats, are often identified as hazard trees along roads and removed.

Analysis of the existing transportation system indicates that the greater monument landscape has road densities in excess of those cited in the literature as being detrimental to ecosystem processes and wildlife (Forman and Alexander 1998; Forman and Mellinger 1998; Mech 1989; vanDyke et al. 1986). Of specific concern to wildlife is the density of roads in sensitive wildlife areas such as big game winter range, elk management areas, northern spotted owl core areas, and riparian reserves (Table 2-10).

Hydrologic Function and Water Quality

Roads within the monument may alter the groundwater and surface flow patterns locally and may create an imbalance in hydrologic systems. Natural and graveled road surfaces, road cuts, fill slopes, and ditch lines are subject to erosion. Ditch lines that are not effectively drained by relief culverts (cross drains) act as extensions of stream networks that deliver fine sediment, as well as intercepted ground and surface water directly into stream channels. Research (Jones and Grant 1994; Wemple 1994; Wemple, et al. 1996) suggests that roads that contribute to the extension of the stream channel network are related to changes in the timing and magnitude of peak flows. Road cuts

Table 2-10. Road Densities within Special Areas and Reserves (Excluding Previously Decommissioned Roads)

Item	Miles of Road	Area (mi.^{2})	Road Density (mi./mi.^{2})
Northern Spotted Owl Core Areas (BLM lands only)	9.74	3.14	3.10
Elk Management Areas	68.48	21.57	3.17
Big Game Winter Range Areas	23.48	11.60	2.02
Riparian Reserves (BLM lands only)	60.63	16.56	3.66

Table 2-11. Road Densities by Watershed and Subwatershed within the CSNM.

Level 5 Watershed	Level 6 Subwatershed	Area (acres)	Area (mi.^{2})	Road Miles	Road Density (mi./mi.^{2})
Bear Creek	Upper Emigrant Creek	13,693	21.39	78.05	3.65
Bear Creek Watershed Totals		**13,693**	**21.39**	**78.05**	**3.65**
Jenny Creek	Upper Jenny Creek	3,014	4.71	27.50	5.84
Jenny Creek	Johnson Creek	445	0.69	3.00	4.32
Jenny Creek	Middle Jenny Creek	14,359	22.44	94.45	4.21
Jenny Creek	Keene Creek	16,575	25.90	103.67	4.00
Jenny Creek	Lower Jenny Creek	13,437	21.00	59.74	2.85
Jenny Creek Watershed Totals		**47,830**	**74.73**	**288.37**	**3.86**
Klamath-Iron Gate	Fall Creek	543	0.85	4.58	5.40
Klamath-Iron Gate	Camp Creek	8,574	13.40	28.48	2.13
Klamath-Iron Gate	Scotch Creek	4,331	6.77	13.65	2.02
Klamath-Iron Gate Watershed Totals		**13,448**	**21.01**	**46.71**	**2.22**
Cottonwood Creek	East Fork Cottonwood Creek	6,705	10.48	32.31	3.08
Cottonwood Creek	Middle Cottonwood Creek	3,320	5.19	16.04	3.09
Cottonwood Creek Watershed Totals		**10,025**	**15.66**	**48.35**	**3.09**

the timing and magnitude of peak flows. Road cuts intercept subsurface flow, effectively increasing the amount of surface flow, and the ditch lines allow the water to move through the stream systems quicker. Road densities throughout the monument are high: level 6 subwatersheds (Map 4) have road densities that exceed four miles per square mile (Table 2-11).

Key Watershed

Over half of the monument (55 percent of the BLM lands) is located in the Jenny Creek Watershed, which was identified as a Tier 1 Key Watershed under the Northwest Forest Plan (USDA/USDI 1994b). Tier 1 Key Watersheds contribute directly to the conservation of at-risk fish species and have a high potential of being restored as part of a watershed restoration program. The Northwest Forest Plan calls for reduced road densities in key watersheds in order to facilitate recovery of watershed function and aquatic biodiversity. The road density in the Jenny Creek watershed within the CSNM is 3.86 mi./mi.^{2} (Table 2-9). Research suggests that stream habitat shows signs of degradation when road densities exceed 2 mi./mi.^{2} (Quigley and Arbelbide 1997; Dose and Roper 1994).

Aquatic Species, Riparian Areas, and Water Quality

Road density within the riparian reserves in the monument is 3.66 mi./mi.^{2} (Table 2-10). Roads within riparian areas can greatly influence aquatic and riparian conditions. Roads contribute to the disruption of aquatic connectivity, large wood and nutrient storage regimes, peak flow routing, aquatic habitat complexity, temperature regimes, channel morphology, and direct sediment inputs from road failures.

Many aquatic and terrestrial species are dependent on riparian areas for their survival. Removal of large wood associated with past road construction has simplified channel structure and degraded aquatic habitats. Travel corridors (connectivity) for small mammals and herptiles are blocked by roads. Road crossings often create barriers to migration along the stream corridor, especially in the upstream direction. Sedimentation alters habitat for species that need interstitial spaces and clear water for egg mass development and gravels for spawning. An increase in stream temperatures and lack of vegetative cover eliminates habitation in these streams for some species. Stream systems are often confined by parallel road systems which may incise channels and restrict floodplain access.

Exotic Species/Noxious Weeds

Disturbance associated with road construction and subsequent travel over roads provides corridors for the spread of noxious weeds and other invasive species. An analysis of the spatial relationship of individual weed populations relative to disturbance factors throughout the monument indicate that higher than expected counts of weed populations occur within 100 meters (328 feet) of roads. Most of the recorded weed populations within the monument are found in close proximity to roads (Map 15).

Fire Ignition and Suppression

The road network is associated with both fire ignition and fire suppression. An analysis of available spatial data for human- and lightning-caused fire starts within the monument between 1967 and 2003 indicates that 46 percent of the fire starts were attributed to human activities (114 out of 250 fires). Of the human-caused fires, 39 percent (45 out of 114 fires) were within 100 meters (328 feet) of a road. Closing roads may reduce human-caused fire ignitions, but it may also result in slower response times for fire suppression.

Human Impacts Associated with the Presence of Roads

The road network provides opportunities for visitors to see and experience different areas throughout the monument. Roads often enter and leave private land several times (e.g., Soda Mountain Road) before reaching a public destination such as the Pacific Crest National Scenic Trail (PCT). In some cases, the BLM does not have the legal right to allow the public to use roads to access popular BLM sites. At this time, landowners have not prevented the public from general use of these roads. However, this informal public use across private lands takes place at discretion of the road owner(s) and could cease at any time, thereby limiting access to these sites. Illegal cross-country use by motorized vehicles remains a problem throughout the monument. Roads also facilitate the illegal dumping of trash and toxic or hazardous waste.

Livestock Operations

Livestock operators with existing leases in the monument rely on the road network to manage their allotments. Since monument designation, the BLM has permitted livestock operators "interim access" on some roads that are closed to the public to maintain fence and water developments and conduct livestock handling activities. These roads may be closed to motorized access in the future.

PRIMARY MANAGEMENT OBJECTIVES FOR TRANSPORTATION

The main objective of transportation management is to maintain a road network within the monument that allows for ecosystem restoration and provides for human access needs. This can be accomplished through the targeted reduction of road densities, while maintaining an appropriate level of access for various recreational activities, livestock lessees, private property owners, resource management, wildfire suppression, law enforcement, and other administrative uses. Management activities associated with the transportation system would meet the Aquatic Conservation Strategy objectives (USDA/USDI 1994b, B-11).

Implementation of management outlined in this proposed plan and future transportation planning would strive to meet the following objectives:

1) Maintain the minimal transportation system necessary to facilitate the protection of monument resources.

- Where possible, reduce the amount of existing roads in the monument, particularly where road densities exceed two miles per square mile.
- Close roads identified for closure in the presidential proclamation.
- When possible, decommission rather than close roads to minimize resource impacts.

2) Reduce the incidence of trespass and other problems associated with public access to the monument through private land.

- Where appropriate, use signs or maps to clearly identify the boundary between public and private land.
- Where appropriate, seek to acquire easements for the public to use roads that lead to BLM lands.

- Coordinate with landowners on a site-specific basis when problems arise.

3) Eliminate illegal cross-country use by motorized vehicles.

- Identify and close unofficial (non-inventoried) routes that may cause resource degradation or promote illegal activities.
- Use law enforcement personnel to ensure that laws and regulations pertaining to the protection of monument resources are followed.

4) Balance the risk of fire ignition associated with roads with the need for access for fire suppression activities.

- Consider input from Oregon Department of Forestry (ODF) and local fire districts when planning to close or decommission roads.
- Assess the potential for increased human-caused fire starts near open roads.

5) Ensure legal road access to holders of ROW grants and reciprocal agreements in accordance with the terms of the right-of-way grants or reciprocal agreements.

- Coordinate with ROW/reciprocal agreement holders when proposing to close any roads under existing ROW/reciprocal agreements.
- Work closely with new ROW/reciprocal agreement applicants to determine routes that best provide access while protecting monument resources.

6) When requested, provide reasonable and legal access to all private property.

PRIMARY MANAGEMENT TOOLS FOR TRANSPORTATION

There are a variety of options for managing the monument's transportation system. There are advantages and disadvantages associated with each management option depending on the site- specific need. Some of the primary management tools that would be used are listed below.

Road Closures

Seasonal, temporary, and long-term road closures would be used to reduce the open road density in order to protect monument resources. Gates and road barriers regulate vehicle access in order to reduce maintenance costs, road damage, soil erosion, water quality degradation, the spread of noxious weeds, wildland fire risk, and wildlife disturbance. Road closures restrict unauthorized motorized access while allowing access for administrative purposes, ROW grants, reciprocal agreements, fire suppression, or other authorized uses. Roads that are closed but not decommissioned may be maintained. Seasonal closure of roads with natural surfaces may prevent damage during the wet season. Roads may also be closed on a seasonal basis to provide various species with protection from motorized traffic during the breeding season or other sensitive times.

Road Decommissioning

Road decommissioning occurs when a decision is made to remove a road from the transportation network. The goal of road decommissioning is to return the area affected by the road to a more natural state, and to eliminate some of the ecological impacts associated with the road. Natural decommissioning is generally used with stable, natural-surfaced roads that have not been used very often and are vegetating naturally. Selective ripping, removal of drainage structures, and the construction of water bars may also take place. Mechanically decommissioning involves ripping, seeding, mulching, and planting to re-establish vegetation as quickly as possible. Cross drains, crossing structures with fills in stream channels would be removed, and unstable areas would be repaired or removed where possible.

Road Obliteration

Road obliteration can be used to eliminate the roadbed by restoring natural contours and slopes. During obliteration, all drainage structures are removed and fill material used in the original road construction is excavated and placed on the road prism. Road obliteration is the type of decommissioning that comes closest to restoring hydrologic function to an area. Road obliteration is the most expensive alternative for road removal and in many cases may not be feasible or practical, e.g., when the road prism has vegetated naturally or natural advanced regeneration is already occurring along the road surface.

Drainage Improvement

Inadequate road drainage can be improved by reshaping the road surface and/or by maintaining or installing drainage structures that meet current BLM standards.

Road Stabilization

Road prisms can be stabilized where necessary to prevent erosion and/or slumping by mulching, planting, or rocking.

Maintenance

Road maintenance includes removing safety hazards, surface maintenance, ditch cleaning, and reducing soil erosion potential. Safety hazards include trees that have the potential to fall on structures, recreation areas, or roadways. Proper maintenance of road drainage systems and stream crossing culverts protects water quality and reduces erosion and sedimentation.

Best Management Practices

Best Management Practices (BMPs) related to road renovation/improvement, maintenance, construction, and decommissioning are described in Appendix D of the Medford RMP (USDI 1995a). These BMPs would be used on all BLM-controlled roads within the monument to minimize erosion and sedimentation in a manner that best protects water quality and other monument resources.

Law Enforcement

The BLM's strategy to keep vehicles on designated travelways would be to increase patrol by foot, vehicle, and aircraft. The BLM would be proactive in educating the public about routes that are open using maps and signs. Methods for disseminating information on open travel routes could include one or more of the following methods: signs; the monument website; the visitor center; and the media. The BLM has a cooperative agreement with the sheriff's department in Jackson County to facilitate shared law enforcement and support for enforcing established closures. The BLM would continue to work with counties, state, communities, and others to communicate correct information to the visiting public and residents. Monument staff would patrol on a regular basis throughout the year and additional patrols would be added during periods of intense use, to the extent staffing allows.

PROPOSED MANAGEMENT FOR TRANSPORTATION

The planning team based the following transportation management plan on what is currently known about existing conditions. In order to better protect monument resources and meet management objectives, the management activities described below could be modified in the future. In creating the proposed management plan, staff considered existing ROW grants, leases, permits, and reciprocal agreements on roads throughout the monument. Coordination with current holders, or a change in property ownership, could allow for changes in the monument's overall transportation and access system. The BLM would use the objectives described above when making changes to transportation management.

ACCESS

Valid Existing Rights

Valid existing rights include a variety of BLM authorizations such as ROW grants, leases, permits, and reciprocal agreements. Private landowners (in-holders) will retain access to their property, as existing state and federal law requires the BLM to provide reasonable access to non-federally owned land that is surrounded by public land (Alaska National Interest Lands Conservation Act (ANILCA) of 1980).

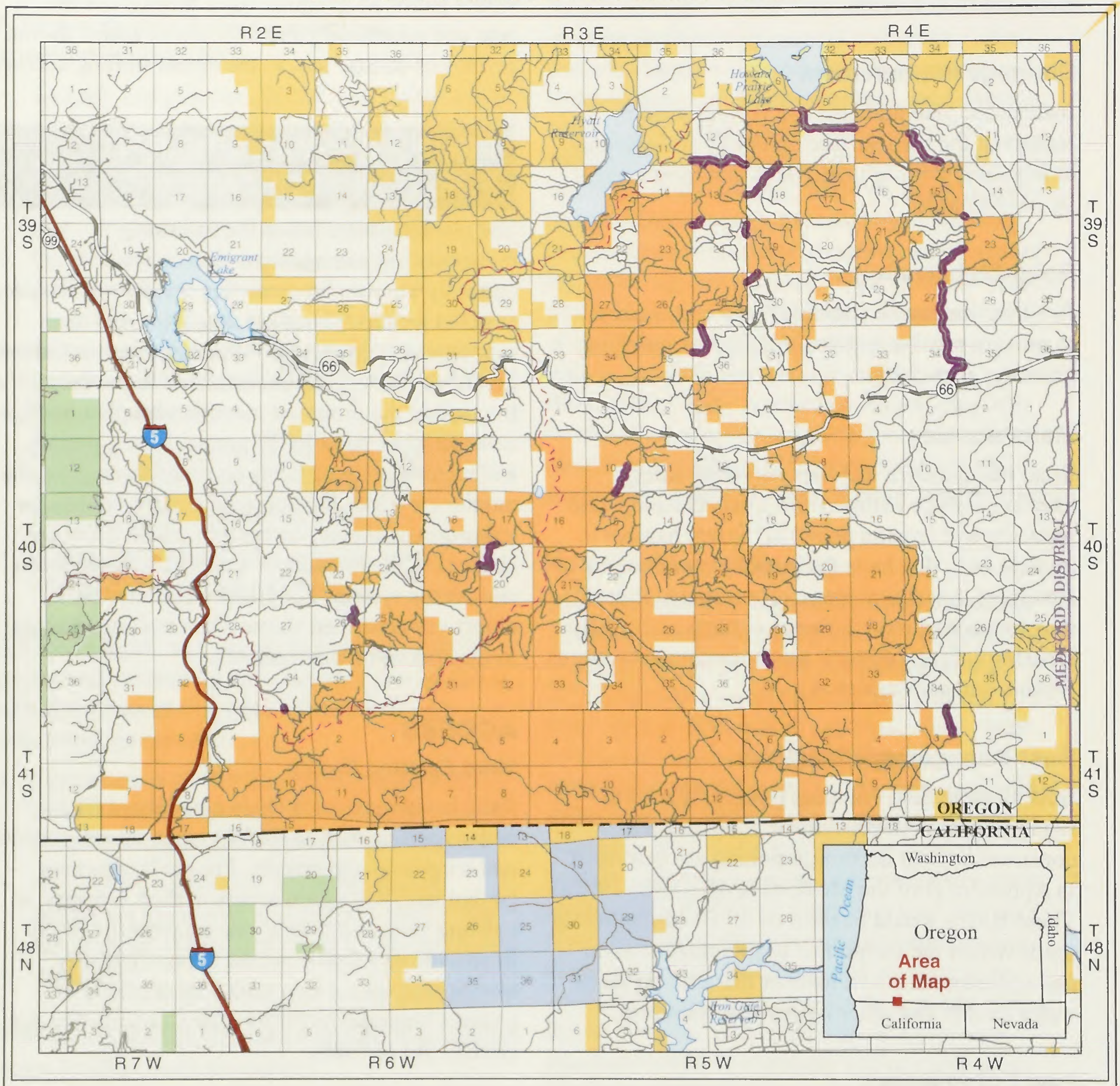
Public Access

In order to allow for legal access to popular destination sites and travel routes, the BLM would pursue acquiring legal easements that allow for public access on the roads shown on Map 21.

Access for Livestock Operations

Since monument designation, the BLM has authorized livestock operators to have vehicle and OHV access on otherwise closed roads in the Agate Flat area, Schoheim Road, Road 41-3E-9.0, Randcore Pass, and through the Box O Ranch (Map 18). Some of the roads currently used by livestock

Map 21: Cascade-Siskiyou National Monument Desired Easements for Public Access



LEGEND

- Easements for Public Access
- Road
- Pacific Crest Trail
- BLM District Boundary

BLM Administered Land

- 🟧 Cascade-Siskiyou National Monument
- 🟨 Other

Other Administered Land

- 🟩 Forest Service
- 🟨 Bureau of Reclamation
- 🟦 State
- ☐ Private or Other

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1 0 1 2 Kilometers

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operators would be decommissioned (Map 22) and OHV use would be restricted or eliminated. Livestock operators would continue to have access on some closed roads deemed necessary for the management of livestock operations.

Road Construction

Road construction could take place under limited circumstances. Access for in-holders, requirements under valid existing rights, or the relocation of an existing road in order to reduce impacts on the "objects of biological interest" are examples of when new road construction might occur. Road construction would be designed to minimize resource damage and to meet the BMPs described in Appendix D of the Medford RMP.

Administrative Access and Service Roads

Administrative routes would be limited to authorized users. These are existing routes that are closed seasonally or year-round, but lead to facilities or areas that have an administrative or other purpose. These authorized developments include power lines, cabins, weather stations, communication sites, etc. Service roads are also used to access and maintain land-use authorizations such as fences, ponds, utility lines, and irrigation ditches. These roads are normally high-clearance, 4-wheel drive roads that are not normally part of the transportation system. Access would be strictly limited and would only be granted for specific purposes. Authorized users could include researchers, state or federal agencies, utility companies, and others carrying out authorized activities under a permit or other authorization. Occasionally, authorized ROW holders need to perform emergency maintenance and will use the service roads during inclement conditions. They are required to mitigate any adverse impacts.

Emergency/Fire Suppression Access

During fire suppression activities or other types of emergencies (e.g., search and rescue and medical evacuation), it may be necessary to open decommissioned roads or construct roads with a dozer. Where emergency actions are required for fire suppression, a project inspector, in consultation with a resource advisor, will be the on-the-ground BLM representative authorized to permit opening decommissioned roads or constructing roads within the monument.

Off-Highway Vehicle Access

Currently, OHVs/mechanized vehicles are allowed on all open BLM-designated roads. The BLM is analyzing the monument's road network to determine which open roads are compatible with OHV/mechanized vehicle use. Once this process is complete, the BLM will publish a notice in the Federal Register identifying all open or closed OHV/mechanized vehicle routes within the monument. The BLM will also inform the public about the open OHV/mechanized vehicle routes using maps, signs, monument website, or other appropriate methods.

The unregulated use of OHVs/mechanized vehicles off of designated routes has the potential to damage monument resources, increase recreation conflicts, and cause erosion. The presidential proclamation prohibits "all motorized and mechanized vehicle use off road." Existing OHV/mechanized vehicle travel routes not on designated roads will be considered for restoration to meet the intent of the presidential proclamation.

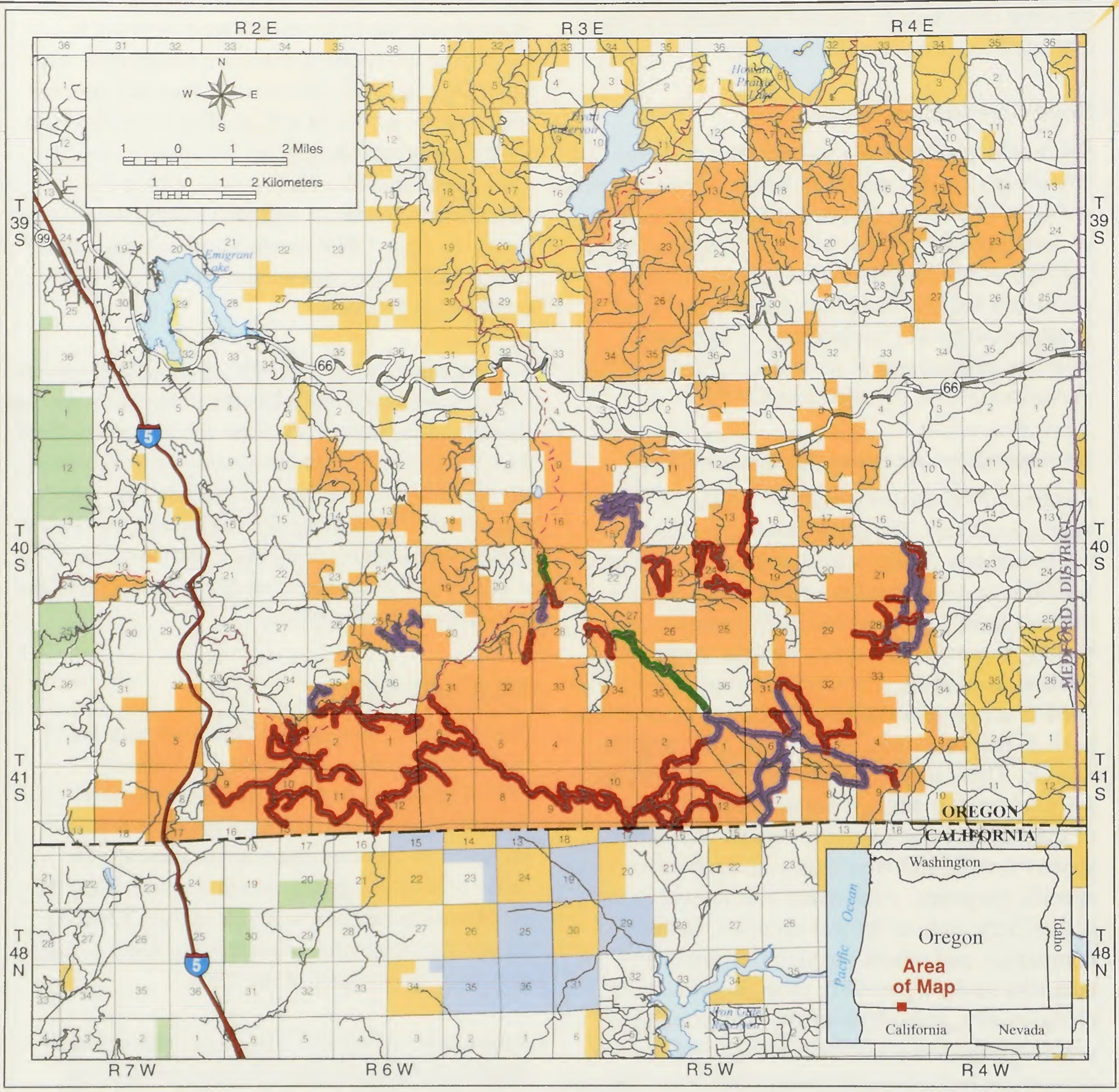
ROAD DENSITY

Road densities throughout the monument are higher than desired to protect the "objects of biological interest" and support naturally functioning ecosystem processes. This plan proposes to decommission approximately 53 miles of road (Map 22), which would reduce the BLM-controlled road network in the CSNM by 21 percent; this would significantly reduce road densities, particularly in the DEA.

Subsequent to the draft plan, the planning team identified approximately 24 miles of road that are not needed for monument management. Decommissioning these roads would reduce road densities and may be beneficial to the objects identified in the proclamation and ecosystem processes. These roads (Map 23) may be considered for reduction in a future planning action.

Transportation needs on any newly acquired lands would be evaluated and roads may be blocked or decommissioned to further reduce road density and protect resource values.

Map 22: Cascade-Siskiyou National Monument Proposed Road Treatments



LEGEND

― Road

Proposed Road Treatment

― Decommission

― Improve Drainage/Block

― Improve Drainage/Leave Open

- - - - Pacific Crest Trail

― BLM District Boundary

BLM Administered Land

🟧 Cascade-Siskiyou National Monument

🟨 Other

Other Administered Land

🟩 Forest Service

🟨 Bureau of Reclamation

🟦 State

⬜ Private or Other

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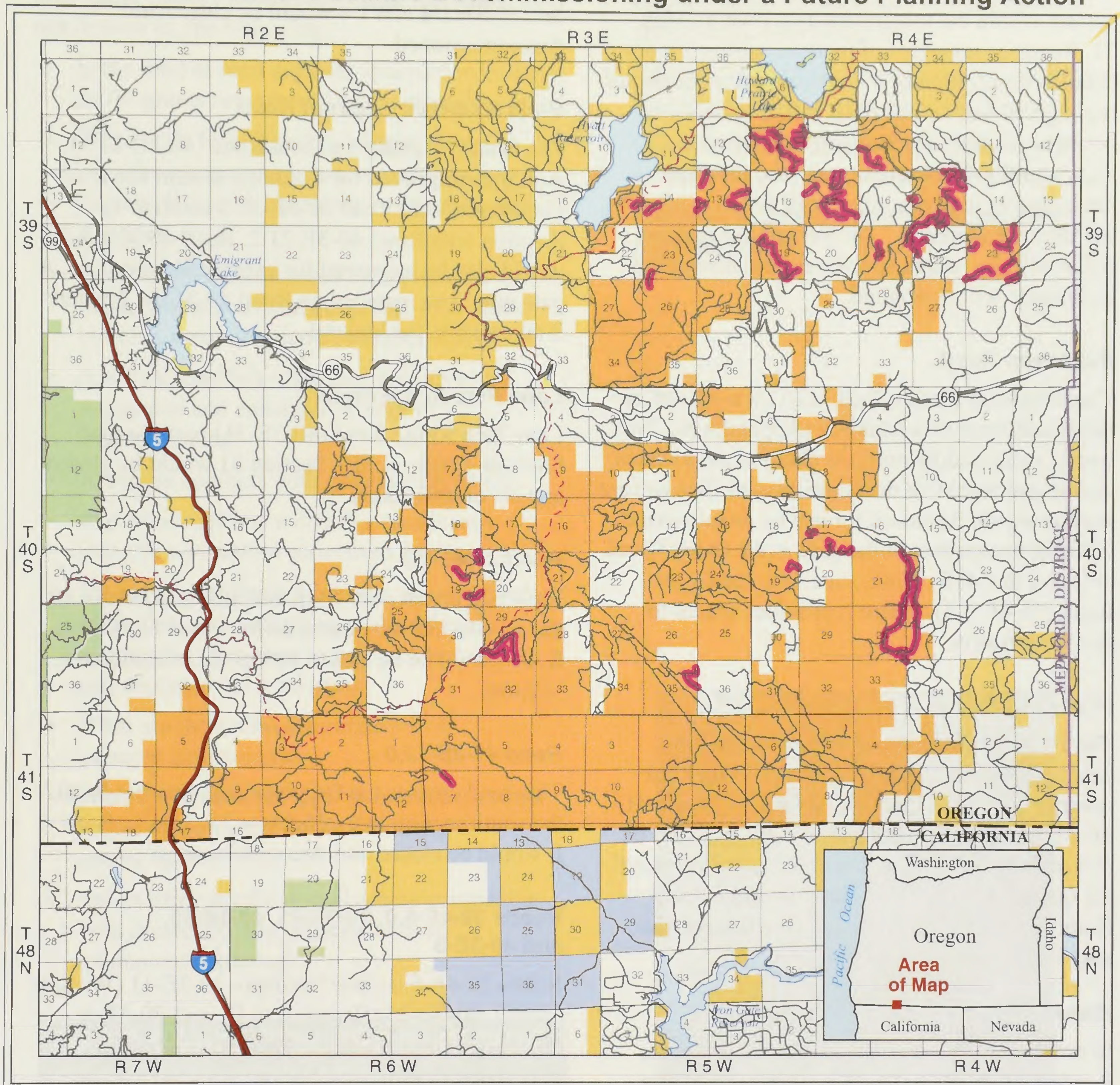
Map 23: Cascade-Siskiyou National Monument Roads Identified for Possible Decommissioning under a Future Planning Action



LEGEND

- Future Proposed Decommissioning
- Road
- Pacific Crest Trail
- BLM District Boundary

BLM Administered Land

- 🟧 Cascade-Siskiyou National Monument
- 🟨 Other

Other Administered Land

- 🟩 Forest Service
- 🟨 Bureau of Reclamation
- 🟦 State
- ☐ Private or Other

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SITE-SPECIFIC MANAGEMENT

This plan proposes to manage the transportation system within the monument as shown on Map 22. Roads or segments of roads requiring a more detailed description of the proposed treatments are highlighted below. The draft plan distinguished between roads that would be mechanically and naturally decommissioned. The proposed management plan describes both these categories as "decommissioning." On-the-ground analysis will determine where specific decommissioning techniques will be applied.

Schoheim Road

The Schoheim Road (41-2E-10.1) was closed by the presidential proclamation (Appendix A). The western and middle portions (Map 22) have been closed and would be decommissioned. The eastern portion would be closed for use by unauthorized vehicles except east of the gate at the Jenny Creek crossing in T.41S., R.4E., Sec. 9 to the Copco Road (40-4E-3.1), where it provides access to private property.

Pilot Rock Road

The BLM would improve and maintain the existing Pilot Rock parking facility at the rock quarry along Pilot Rock Road (40-2E-33 and 41-2E-3). The Pilot Rock Road (41-2E-3) would be closed at this point and decommissioned beyond the quarry. A trail would allow access to Pilot Rock beyond the road closure (see **Recreation and Visitor Services** section).

Randcore Pass Road

In order to meet the intent of the proclamation, Randcore Pass Road (40-4E-19.2) south of the junction with road 40-4E-31.0 would be closed for use by unauthorized vehicles.

Skookum Creek Road

Skookum Creek Road (40-3E-28 and 40-3E-27.2) past the junction with Road 40-3E-27.1 would be improved and left open to the public to where Section 36 (T.40S.,R.3E.) and Section 1 (T.41S.,R.3E) meet. Skookum Creek road past where Section 36 (T.40S.,R.3E.) and Section 1 (T.41S.,R.3E) meet would be closed to unauthorized use.

Road 41-2E-9.0

Road 41-2E-9.0 past the corral in T.41S., R.2E., Sec. 9, SW1/4 NW1/4 would be closed and decommissioned.

Soda Mountain Lookout Road

The Soda Mountain Lookout Road (40-3E-21.1) would be improved for extended-season use from its junction with Road 39-3E-32.3 south to its junction with Road 40-3E-21.2. Road 40-3E-21.2 would also be improved for extended-season use. A gate would be installed on Road 40-3E-21.2 where it takes off to the lookout.

Lone Pine Ridge Road

Lone Pine Ridge Road (40-3E-31) past the road block in T.40S., R.3E., Section 31 would be closed and decommissioned.

Road 41-4E-7.0

This road crosses the Oregon-California border at the section line between sections 7 and 18, T.41S., R.4E. It would be closed for use by unauthorized vehicles.

Road 41-2E-12.0

This road crosses the Oregon-California border at the south section line of Section 13, T.41S., R.2E. It would be closed and decommissioned.

Roads 39-4E-6.0, 39-3E-11, 40-3E-35, and 40-3E-3

Roads 39-4E-6.0 (Yew Springs), 39-3E-11 (Wildcat Glade), 40-3E-35 (Beaver Creek), and 40-3E-3 (South-East Hyatt Lake) would be closed with gates from November 15th through April 15th (or as substantial snowfall amounts dictate) in order to provide the best possible snow conditions for winter recreationists.

IMPLEMENTATION CONSIDERATIONS FOR TRANSPORTATION

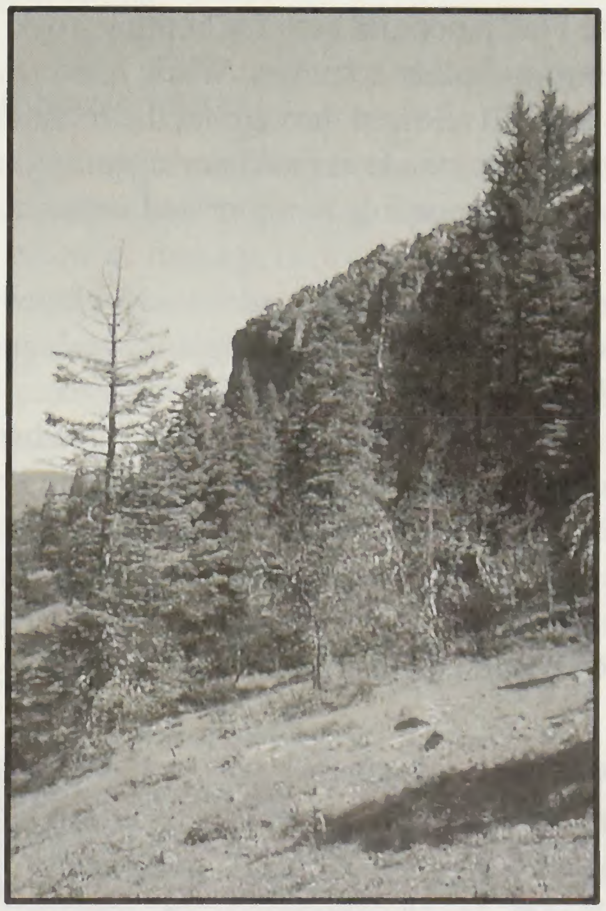
This management plan proposes some site-specific decisions about road closures and road decommissioning. Decisions regarding future changes in transportation management in accordance with the objectives described in the proposed plan (including proposed closures, acquiring easements, and decommissioning) would take many issues into consideration, including, but not limited to, the following:

- Is the road or road segment included in existing ROW grants or reciprocal agreements?
- Who might be affected by potential road closures (property owners, recreational users, hunters, livestock operators, researchers, other agencies, etc.)?
- How would road closures limit potential management activities (thinning, prescribed burning, noxious weed treatments, etc.)?
- Are there conflicts with rare, sensitive, or threatened and endangered plant or animal species?
- Are there conflicts with cultural resources?
- Are there conflicts with other monument resources or natural ecosystem processes?
- Do adverse ecological impacts to monument resources outweigh potential benefits of leaving the road open (e.g., fire suppression and management activities)?
- What are the access requirements of adjacent landowners?
- What is the need for legal public access when acquiring new or reviewing existing access rights?
- Are existing levels of road access compatible with protection and enhancement of monument resources?

IMPLEMENTATION PROCEDURES FOR TRANSPORTATION

Once the BLM determines that management actions (beyond those described in this plan), such as road closures, decommissioning, or increased public access, are necessary in order to meet the objectives described in this plan, some or all of the following steps would be taken:

- Where existing ROW grants are involved, discuss potential changes with ROW holders.
- Discuss potential closures or decommissioning with ODF.
- When a road is gated, provide ODF, ROW holders, and other authorized users with keys to allow continued access.
- The appropriate method of closure to address resource issues would normally be determined through an interdisciplinary process based on site-specific considerations.
- Inform affected adjacent landowners, authorized livestock lessees and the interested public.
- Conduct the appropriate level of site-specific analysis in order to comply with NEPA.
- Publish a Federal Register notice detailing road closures.



Recreation and Visitor Services

OVERVIEW

The area that is now the Cascade-Siskiyou National Monument (CSNM) has long been popular for recreation. Recreational hiking, hunting, and fishing began around the turn of the century and continue as favorite uses of the area. The major recreational activities that occur throughout the monument include camping, hiking, horseback riding, pleasure driving, sightseeing, hunting, fishing, cross-country skiing, snowmobiling, rock climbing, and nature study. The Hyatt Lake Recreation Area is the only developed recreation site within the monument. The Pacific Crest National Scenic Trail (PCT) provides hiking opportunities at multiple locations within the monument.

Some forms of recreation in the monument were limited or curtailed by the presidential proclamation. The proclamation banned off-road travel by motorized or mechanized vehicles, eliminating the popular use of OHVs to travel cross-country in the area. The mandated closure of Schoheim road restricted mechanized access to Agate Flat, a popular area for hunting, rock collecting, and other activities. While hunting and fishing are still allowed throughout the monument, restrictions have made some historic hunting camps and sites less accessible to motorized vehicles.

The majority of the monument is undeveloped and visitor use is estimated as light to moderate throughout the area; informal observations, however, indicate that visitation to the area has increased since monument designation. The Hyatt Lake Recreation Area receives moderate use during the months of April through October. In 2003, records show that 14,139 people visited the Hyatt Lake Recreational Complex.

PRIMARY MANAGEMENT CONCERNS RELATED TO RECREATION

Different forms of recreation have the potential to impact monument resources. Ecological impacts of recreation can include soil compaction, inadvertent or unintentional harassment of wildlife species, trampling or harvesting of sensitive vegetation, increased fire risk, and the spread of noxious weeds. Several specific management concerns are discussed below.

Mixed Ownership

Managing recreation presents a challenge due to the high percentage of private ownership across the landscape and the network of public and privately controlled roads. In many cases, either limiting or providing public access to an area requires BLM to work with the private landowners who control sections of road throughout the monument.

Due to the checkerboard ownership pattern of public and private land in the region, private lands are sometimes mistaken for monument lands. Visitation to the monument may result in inadvertent trespass on private lands.

Increased Visitation

Visitation to the monument is expected to increase. The northern portion of the monument is easily accessible and well-suited to visitation. There are many areas in the monument that do not have official trails, but are popular places to visit. As some of these areas have sensitive vegetation that is easily trampled, increased visitation could result in additional resource degradation.

The south zone (Map 4) of the monument is primarily rugged and undeveloped. The remoteness of these areas limits human disturbance on the monument's resources and natural ecosystem processes. Although these areas offer excellent opportunities for exploration and discovery, increased visitation could diminish the wilderness-like character of the area and have negative impacts on monument resources.

Trail Proliferation

The Pacific Crest National Scenic Trail (PCT) is the only developed trail in the monument. However, the PCT does not directly access many popular sites within the monument. Secondary trails and parallel trails may result from increased visitation. These unofficial trails can increase erosion and diminish the primitive characteristics of an area. Increased parking in unauthorized areas can widen the road prism, also increasing erosion and providing additional opportunities for noxious weeds.

Illegal Motorized Use

Prior to designation, the monument was a popular place for OHV use. Although cross-country travel by OHVs is now prohibited, illegal use of OHVs has become a problem. OHV use can damage sensitive plant communities, spread noxious weeds, and disrupt the experience of other visitors.

PRIMARY MANAGEMENT OBJECTIVES FOR RECREATION

The monument is a part of the BLM's National Landscape Conservation System (NLCS), established to protect some of the nation's most remarkable and rugged landscapes. A key NLCS objective is to provide opportunities for the individual to explore and discover these special areas. Proposed monument management seeks to accommodate existing and future uses in a manner that balances recreation with the protection of monument resources and natural ecosystem processes. Implementation of management activities outlined in the proposed plan would strive to meet the objectives listed below:

1) Provide opportunities for visitors to explore and discover different components of the CSNM.

- Provide information for a variety of users regarding the different types of recreational opportunities in the monument through interpretive sites, signs and brochures.

2) Preserve the monument's rugged and wild backcountry as a primitive recreation experience.

- Encourage visitors to use the monument's developed recreation sites. These include the Hyatt Lake Recreation Area and the Pacific Crest National Scenic Trail (PCT).
- Promote "Leave No Trace" camping and hiking methods.
- Minimize signs or visitor improvements in remote areas.

3) Balance recreational opportunities with the protection of monument resources.

- Monitor areas for unacceptable changes.
- Consider alternatives to site development (road closures, permits, etc.).
- Educate users about the potential negative impacts of different activities.
- Use law enforcement to ensure that laws and regulations pertaining to the protection of monument resources are followed.

4) Minimize disturbances to adjacent landowners.

- Inform adjacent landowners when proposing changes in recreation management.
- Where appropriate, use signs or maps to clearly identify the boundary between public and private land.

PRIMARY MANAGEMENT TOOLS FOR RECREATION

There are a variety of options for managing recreational uses throughout the monument. There are advantages and disadvantages associated with each option, depending on the site specific needs. Some of the primary management tools that would be used to manage recreation and visitation are described below.

Site Improvement

Resource damage resulting from recreation is often unintentional. Improving a popular site where resource damage is occurring can help contain and focus use through the development of trails, trailheads, parking areas, and toilets. Other improvements such as kiosks or bulletin boards can educate the public about resource concerns. On the other hand, site improvement can also detract from the primitive character of the area and has the potential to attract increased use.

Education

Public education can include informational brochures or flyers, interpretive signs, presentations to groups or individuals, and other types of media or communication. At times, public education can reduce resource impacts without limiting recreational opportunities or changing the character of the site. This may be particularly true when education affects the practices of an organized user-group; in other words, education can be an effective tool in situations where a user-group has the desire to change certain practices. However, education may not be effective if users are not willing to make changes, or if it is not possible to reach a broad spectrum of users through education alone.

Limit or Prohibit Use

Monument staff will monitor levels of visitor use and recreational activities throughout the monument. In the event of unacceptable resource damage, certain recreational uses could be limited or prohibited. Limits can be established through the use of permit systems or group-size limits. Conversely, while limiting or prohibiting use is an effective way of preventing additional resource damage, these methods reduce opportunities for individuals to explore the monument.

Seasonal Closures

Seasonal closures can restrict specific recreational activities during times when activities are most likely to negatively impact monument resources. Seasonal closures could be based on, for example, the breeding or nesting seasons of sensitive species that are vulnerable to disturbance during these times. For some activities, however, seasonal closures could conflict with the primary time of year that a recreational activity generally takes place.

Road Closures

Road closures can limit use at a particular site by increasing the amount of effort that it takes to access an area. Closing a road segment can also make it possible to encourage parking in a more appropriate area. Roads or areas may be closed to motorized vehicles if the BLM determines that resource damage or illegal actions are occurring. Under these circumstances, some roads that are open to vehicle access may be closed to OHVs if it is determined that OHVs are the primary cause of resource damage.

Law Enforcement

Law enforcement would be used in situations where individuals or groups violate regulations or laws pertinent to the CSNM, or cause resource damage through their actions. Law Enforcement Officers could monitor activity in the monument using foot, horse, plane, and vehicle patrols as part of BLM's strategy to ensure the protection of monument resources.

PROPOSED MANAGEMENT FOR RECREATION

The planning team based the following proposed recreation management activities on what is known about current conditions and existing levels of recreation. In order to protect monument resources, it could become necessary to modify the management activities described below in areas where resource damage is occurring or has a strong potential to occur. The monument's adaptive management plan is described in Appendix C. The BLM would use the objectives and tools described above when making a change to recreation management in the monument. Recreational activities not mentioned in this plan would be analyzed on a case-by-case basis.

Bicycles

Bicycles (non-motorized) would be allowed on open roads and on most designated roads open to administrative use but otherwise closed to motorized vehicle access. Bicycles are not allowed on trails, including the Pacific Crest National Scenic Trail (PCT). Bicycles would not be allowed on roads closed by the proclamation or those roads identified for decommissioning (Map 24). Bicycles would not be allowed cross-country within the CSNM.

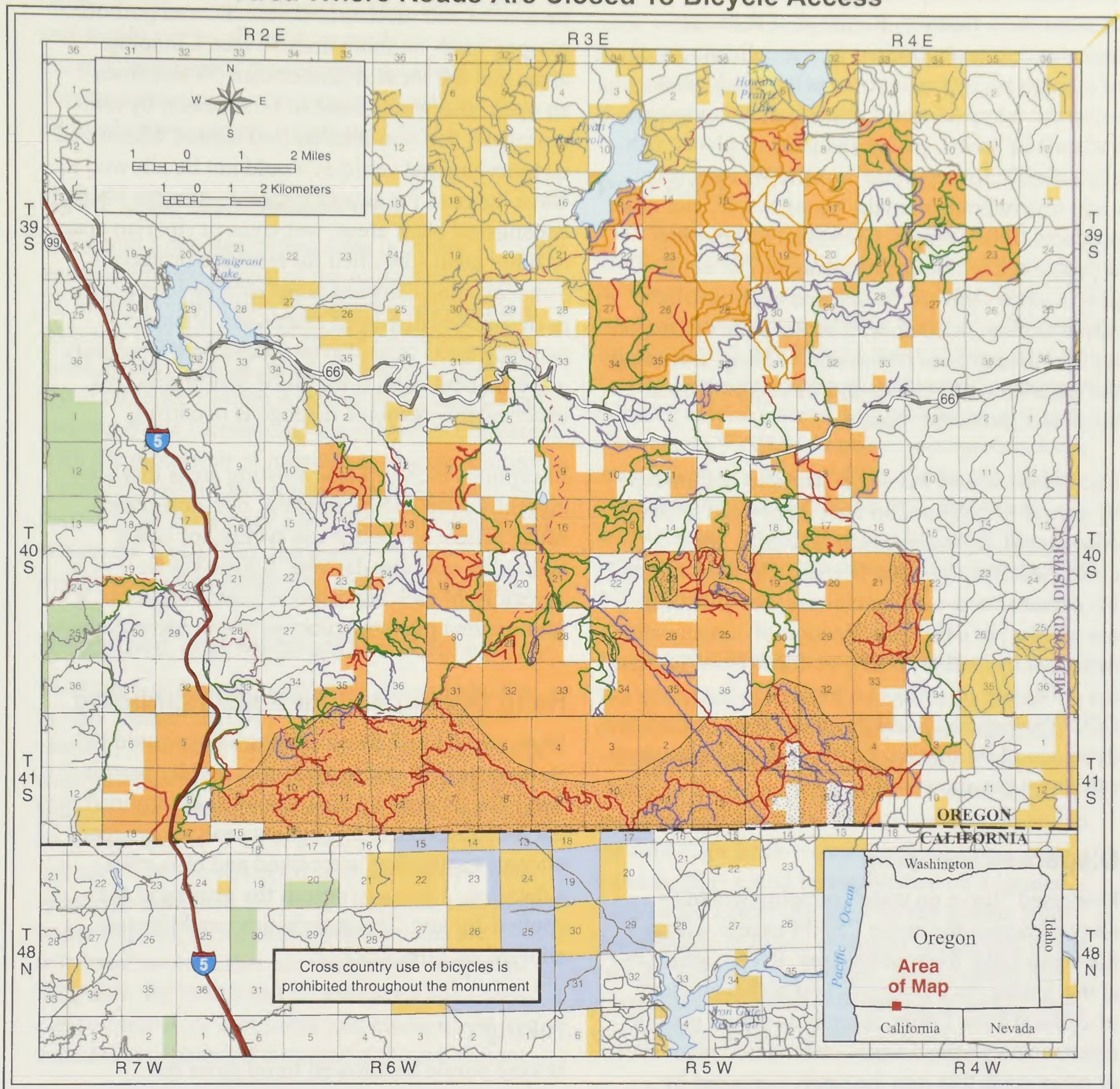
Campfires

Campfires would be allowed throughout the CSNM except within areas where camping is prohibited. All campfires would be consistent with Oregon state regulations. Only dead and down wood could be collected for campfires. Cutting of live vegetation or snags would not be allowed. Campers are responsible for adhering to seasonal restrictions on campfires as mandated by the Oregon Department of Forestry. Within the Hyatt Lake Recreation Area, campfires are allowed only in designated fire pits.

Climbing

In order to protect natural geologic features and vegetation such as lichens and mosses, technical rock climbing would not be allowed within the CSNM, except on Pilot Rock. Rock climbing on Pilot Rock would be subject to the restrictions described in the Pilot Rock section below.

Map 24: Cascade-Siskiyou National Monument Area Where Roads Are Closed To Bicycle Access



Cross country use of bicycles is prohibited throughout the monument

LEGEND

Closure Status

- — Private or Unknown
- — Open
- — Seasonally Closed
- — Closed
- — Road Outside Greater Cascade-Siskiyou National Monument Boundary
- - - - Pacific Crest Trail
- — BLM District Boundary

░ Bicycle Use Prohibited On Roads Within This Area

BLM Administered Land

- 🟧 Cascade-Siskiyou National Monument
- 🟨 Other

Other Administered Land

- 🟩 Forest Service
- 🟨 Bureau of Reclamation
- 🟦 State
- ⬜ Private or Other

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Collections/Special Forest Products

The proclamation specifically prohibits the removal of monument features. Removal of features includes, but is not limited to, the collection of any monument resources such as rocks and minerals, petrified wood, fossils, archaeological and cultural items, plants and parts of plants, fish and animals not regulated by ODFW, insects or other invertebrate animals, bones, waste, and other products from animals. Christmas tree cutting is prohibited within the monument. The above prohibitions shall not be deemed to diminish the responsibility and authority of the State of Oregon for the management of fish and wildlife, including the regulation of hunting and fishing on federal lands within the monument.

Exceptions would include collections authorized by permit in conjunction with authorized research, educational, or management activities; the collection of fruits, nuts, berries, and mushrooms for personal non-commercial use, not to exceed one gallon per day; the collection of certain natural materials by Native American under BLM permit; the collection of antlers or horns as provided by ODFW regulations; and the collections of dead and down wood for immediate use in campfires, where campfires are allowed.

Dispersed Camping

Dispersed "leave no trace" camping would be allowed across the entire CSNM except within the Hyatt Lake Recreation Area, RNAs, structures at the former Box O Ranch, and archaeological or cultural sites. Other exceptions would include riparian and wetland areas, endangered plant sites, or other areas that may be easily damaged by camping. In order to reduce impacts to monument resources, groups larger than 12 would not be allowed to camp in the south management zone (Map 4) without prior authorization. Group camping in excess of 12 would be allowed for administrative purposes as long as the activity does not interfere with the protection of monument objects or resources. Administrative purposes may include authorized research, survey crews, fire crews, or other authorized tasks requiring an overnight stay in the monument.

Access to Dispersed Camping Areas

For direct access to existing dispersed camping, motorized and mechanized vehicles can pull off of open roads no more than 50 feet. Camping areas that are located further than 50 feet from an open road would need to be accessed by non-motorized and non-mechanized means. Motorized and mechanized vehicles would not be allowed to leave the road for access to camping in the RNAs, endangered plant areas, wet areas or riparian areas, or other areas identified for resource protection. Some existing camping areas may be identified as designated dispersed campsites. Historic camping areas may also be closed on a temporary or permanent basis if the BLM determines that unacceptable resource damage is occurring.

Exceptions include some existing areas that are currently accessed by existing, non-designated routes where continued use would not cause additional resource damage. Following an inventory of existing dispersed camping areas, a future tiered planning process would identify these.

Hang Gliding and Para-sailing/gliding

Hang gliding and para-sailing/gliding would be allowed only in designated areas and by permit only. The designated area would be determined by the monument staff through an analysis process after an application is received and only after a decision is made to permit the activity at the applied-for site. These activities would not be allowed on Pilot Rock.

Hiking

Hiking would be allowed throughout the monument. Groups larger than 25 would be required to contact monument staff for information on ways to mitigate possible resource damage in sensitive areas.

Hunting and Fishing

Visitors participating in hunting and fishing activities will be required to comply with regulations set by the Oregon Department of Fish and Wildlife. Non-motorized game carriers would be allowed on roads open to motorized and mechanized access, as well as most designated roads that are open to administrative use but otherwise closed to motorized vehicle access. Non-motorized game carriers are not allowed on the Pacific Crest National Scenic Trail (PCT) and would not be allowed on roads closed by the proclamation or those roads identified for decommissioning. Game carriers would not be allowed cross-country within the CSNM.

Hyatt Lake Recreation Area

The Hyatt Lake Recreation Area includes 745 acres in the northwest corner of the monument (Map 2). This recreation area has developed recreation facilities that require substantial investment and management. Management objectives within the Hyatt Lake Recreation Area are to provide for safe and enjoyable recreational opportunities consistent with the protection of monument objects. Camping within the Hyatt Lake Recreation Area would be restricted to designated sites. Future modifications within the Hyatt Lake Recreation Area would be evaluated and undertaken as needs are identified.

Motorized and Mechanized Recreation

Motorized and mechanized vehicles include, but are not limited to, OHVs, motorcycles, game carriers, all-terrain vehicles, snowmobiles, bicycles and tractors. Motorized vehicles must comply with Oregon state laws and regulations while operating on public lands (43 CFR 8341.1). Motorized vehicles must be equipped with a muffler which meets the standards for noise emissions established under ORS 821.030. Motorized vehicles are restricted to roads that are designated as open to the public for motorized access (Map 19). Cross-country travel by motorized and mechanized vehicles is prohibited throughout the monument.

Persons requiring wheelchairs for mobility may use a motorized or mechanized wheelchair to access any area in the monument. A wheelchair refers to a device that is designed solely for use by a mobility-impaired person for locomotion and that is suitable for use in an indoor pedestrian area.

Paint Ball

The discharging of paint ball guns would not be allowed within or into the CSNM.

Parking

Drivers of motorized vehicles would be required to park within the road prism, preferably on hardened surfaces. Drivers should avoid parking in wet areas and should not park in areas where vegetation damage could occur easily.

Pilot Rock

Pilot Rock is a popular area for hikers and climbers. In 2001, a pair of peregrine falcons reoccupied a historic nest site on Pilot Rock. This location was last occupied by peregrine falcons in the late 1960s. In 1999 the United States Fish and Wildlife Service removed the American peregrine falcon from the Federal List of Endangered and Threatened Wildlife. However, peregrine falcons are a Species of Special Concern for the BLM and require continued protection. Proposed management for climbing and hiking in the Pilot Rock vicinity complies with this protection requirement.

Technical Climbing on Pilot Rock

The south face of Pilot Rock provides some of the best technical climbing opportunities in southwestern Oregon. There are seven recorded technical routes on Pilot Rock. To date, fixed anchors have been placed very conservatively on the four Pilot Rock routes requiring them. New fixed anchors could be established on a limited basis to the extent that they do not detract from the geologic resource or impair the quality of the current climbing experience. Bolts needed for fixed anchors may only be installed using a non-mechanized hand drill and hammer.

In order to better protect the peregrine falcons at Pilot Rock and to help ensure nest productivity, a seasonal climbing closure would prohibit climbing activities on the south and east sides of Pilot Rock from February 1 to July 30 each year. No permit system for climbing would be established at this time. However, use would be monitored and a climbing management plan may be necessary if the seasonal closure is violated or resource damage occurs. A plan for monitoring the peregrine falcon nest site is detailed in Appendix J.

Hiking on Pilot Rock

In addition to technical climbing, Pilot Rock is also a popular destination for hikers who can make their way to the top of the rock without technical assistance. Currently, hikers access Pilot Rock on an unstable trail traversing the ridge west of Pilot Rock before continuing up a chute on the north side of the rock.

This unofficial trail does not bring hikers into direct contact with the peregrine falcons on Pilot Rock. The seasonal restrictions that apply to climbing would not apply to hiking unless hiking is determined to have a negative impact on the falcons. The BLM will educate hikers about the activity restrictions on the south and east sides of the rock from February 1 to July 30 each year. Hikers would be instructed to avoid accessing the south and east sides of rock from the summit. Footing on the trail is poor, and in some places there are large areas barren of vegetation as people seek more stable footing along the sides of the trail. Surface erosion caused by runoff across exposed soils has contributed to the problem.

In order to improve hiking opportunities, increase visitor education, and prevent additional resource damage from occurring in the Pilot Rock area, the following actions would be taken:

- The BLM would improve and maintain the existing Pilot Rock parking facility at the rock quarry along Pilot Rock road (40-2E-33).
- The Pilot Rock road would be closed and decommissioned beyond the quarry.
- A trail would allow access to Pilot Rock beyond the road closure.
- Interpretive and educational materials would be developed regarding the need for seasonal climbing restrictions and the safety issues associated with hiking or climbing on Pilot Rock.
- A subsequent site-specific environmental analysis in the form of an Environmental Assessment would determine a more stable access route to Pilot Rock. The analysis would consider whether the existing trail with its associated erosion problems could be stabilized, or whether the existing trail should be closed and a new route established.

Recreational Animal Stock Use

Recreational stock use includes the use of pack or riding animals such as horses, llamas, or goats for non-commercial uses. Cross-country recreational animal stock use would be allowed in the CSNM with the following restrictions:

- The total number of stock on overnight trips would be four animals per group.
- The total number of stock on day trips is restricted to six animals per group.
- Animals would not be allowed to overnight within 200 feet of any water's edge, or in any wet areas.
- Stock users would be encouraged to feed certified weed-free feed 24 hours prior to entering the monument.

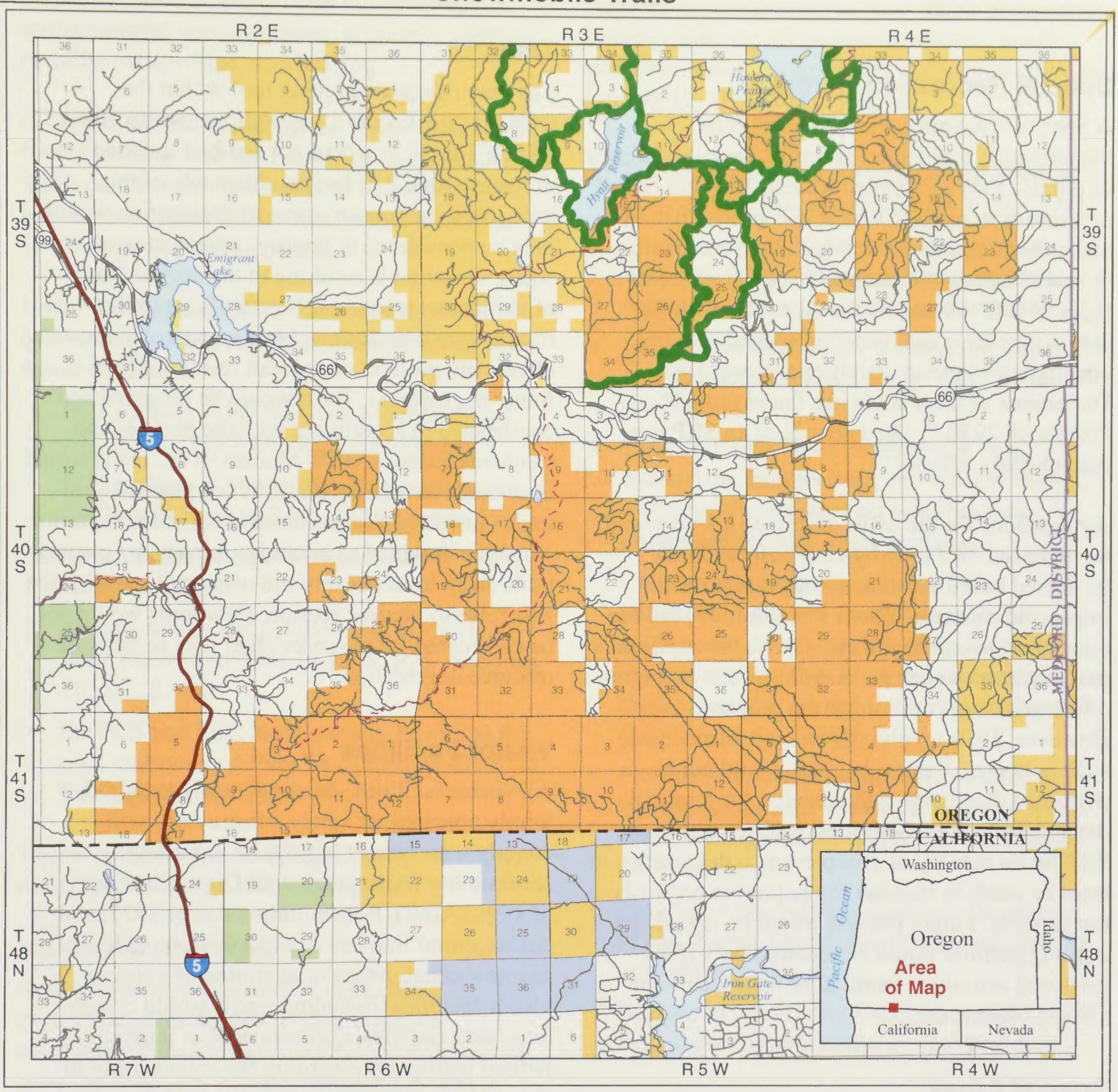
Recreation Use Permits

Recreation Use Permits (RUPs) are authorizations for short-term recreational use of developed recreation facilities. The only developed recreation facility in the CSNM is the BLM's Hyatt Lake Recreation Area. Visitors to this facility are required to purchase a RUP to access camping sites, boat launch areas, day-use sites, group shelters, and day-use sites. RUPs are available on a first-come, first-served basis from fee envelope dispensers at fee stations or the visitor contact station at the entrance to the facility. Group shelter reservations by telephone are also taken at the Medford BLM office on a first-come, first-served basis.

Snowmobiles

Snowmobiles would be allowed on designated open roads in the north management zone. Snowmobiles would not be allowed on roads that are closed or decommissioned and cross-country travel by snowmobiles would be prohibited throughout the monument. The existing snowmobile trails (Map 25) in the north management zone enter and leave private land several times. The BLM does not have legal rights to allow the public to use these roads for winter recreation. At this time, private landowners have not prevented the public from general use of these roads. However, the informal public use across private lands takes place at the discretion of the road owner(s) and could cease at any time, thereby limiting access to these areas. The BLM would seek partnerships with

Map 25: Cascade-Siskiyou National Monument Snowmobile Trails



LEGEND

- Snowmobile Trail
- Road
- Pacific Crest Trail
- BLM District Boundary

BLM Administered Land

🟧 Cascade-Siskiyou National Monument

🟨 Other

Other Administered Land

🟩 Forest Service

🟨 Bureau of Reclamation

🟦 State

⬜ Private or Other

N
W E
S

1 0 1 2 Miles

1 0 1 2 Kilometers

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MEDFORD DISTRICT
Cascade-Siskiyou National Monument
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interest groups to obtain legal easements from private land owners for access rights to historic snowmobile trails.

Special Recreation Permits

A Special Recreation Permit (SRP) is an authorization that allows specified recreational uses of public lands and related waters. They are issued as a means to manage visitor use, protect natural and cultural resources, and provide a mechanism to accommodate recreational uses. There are five types of SRPs issued by the BLM: commercial use, competitive use, vending, special area use, and organized group activities and event use. Definitions of these SRPs are found in BLM Handbook 2930-1. The issuance of an SRP is a discretionary action.

Applications for the SRPs described above would be reviewed on a case-by-case basis and may be denied based upon factors such as potential impacts to resource values; a prohibitive land use allocation; public health and safety; the applicant's past performance; or the inability of the managing office to manage or monitor the proposed use. However, SRPs involving commercial stock use such as horses, llamas, or goats would not be permitted due to the high potential for resource damage from these activities. Before issuing an SRP for an activity or group event, a determination must be made to whether the request is primarily recreational. Future permits would be issued and existing permits would be renewed only if the proposed activity is found to be consistent with CSNM objectives.

Special Areas

Special areas or special use areas are officially designated by presidential proclamation, statute or secretarial order, and include components of the National Trails System, National Wild and Scenic Rivers System, National Conservation Areas, National Monuments and recreation areas, or any area where the land manager determines that natural resources require special management and control measures for their protection. Examples of special use areas within the CSNM include the Oregon Gulch and Scotch Creek Research Natural Areas, the Mariposa Lily Botanical Area, and the Soda Mountain Wilderness Study Area. Permits may be required in special areas on a case-by-case basis for use to achieve management objectives.

Trails

The only designated hiking trail within the CSNM is the Pacific Crest National Scenic Trail (PCT). The BLM would not conduct thinning projects within 250 feet on either side of this trail. New trail construction or designation would only be considered to improve access in areas where visitation is resulting in the degradation of monument resources. New trails, or trail re-routes, would be designed in a manner that most effectively protects monument resources from future degradation. Trails would be designed and constructed in accordance with the policies and standards found in BLM Manual 9114. Trails would be avoided in riparian areas. When placement of trails outside of riparian areas is not possible, trails would be designed to minimize impacts by placing trails away from streams and using soil stabilization structures to prevent erosion. New trails would not be considered for purposes other than to mitigate resource degradation.

Visitor Facilities

All visitor facilities--existing, newly acquired, jointly operated, or newly constructed--will comply with current legislation regarding accessibility (Americans with Disabilities Act of 1990 (ADA), Rehabilitation Act of 1973, and Architectural Barriers Act of 1968). In addition, any new construction or alteration of existing visitor facilities (including trails) would comply with state and local codes as well as impending federal legislation regarding the accessibility of the outdoor recreation environment. All existing and new visitor facilities would be maintained, designed, and constructed according to bureau standards. The above-mentioned acts do not pertain to roads and do not restrict or prevent the closing of roads for resource protection or other administrative purposes.

The proposed plan would allow for the improvement and alteration of existing facilities as part of the monument's visitor services and interpretation program. The Medford BLM would remain a point of contact for visitor information. Facilities could be developed within the surrounding communities for use as visitor contact stations. Exact location of these facilities would be based on availability of infrastructure, environmental site constraints, economic viability, possible partnerships, and funding.

Currently, the BLM has signed a Memorandum of Understanding with the Friends of the Cascade-Siskiyou National Monument to manage a small, self-service visitor information center located at 11470 Highway 66 (Appendix K).

Under the proposed plan, maintenance of the trailheads, parking, and toilet facilities listed below would continue:

- PCT parking along the Soda Mountain road (39-3E-32.3) in T40S, R3E, Section 16;
- PCT parking at Porcupine Gap along the (40-2E-33-3.0) Road in T40S, R2E, Section 35;
- horse corrals along old Highway 99 in T 41S, R2E, Section 9;
- parking within designated areas in the Hyatt Lake Recreation Area: in T39S, R3E, Sections 15, 21, 22; and
- the PCT and Pilot Rock parking facility at the rock quarry along Pilot Rock road 40-2E-33 in T41S, R2E, Section 3.

Toilets could be provided, as necessary, at designated trailheads and parking sites.

Interpretive Sites/Signs

New interpretive sites and/or signs could be developed, as needed, within the north management zone (Map 4) for resource protection, travel information, educational purposes and/or public safety. No new interpretive sites would be developed in the south management zone (Map 4) and new signs would be installed only for resource protection, travel information, and/or public safety.

Visitor Education

Public outreach and education would be designed to promote protection and understanding of the CSNM. The amount of public outreach and education provided for visitors would be contingent on the level and types of activities taking place in the monument. Visitor outreach and education would follow any restrictions on signing, interpretive exhibits, displays, or facilities determined in this plan. Public outreach and education for all monument visitors would emphasize resource protection and visitor safety by meeting the following objectives:

- Provide the public with accurate information on visitation, use, and recreation in the CSNM.
- Identify areas of high visitor use, or areas with particularly fragile resources, and take necessary steps to prevent resource damage.
- Educate visitors on how best to limit impacts to monument resources using "leave no trace" principles.
- Target different types of recreation (e.g., equestrians, backpackers, and snowmobilers) with specific messages on how those user groups can prevent resource damage.
- Clarify visitor expectations and the monument's mission in relation to visitor experiences on other public lands. Educate the public about the vision and mission of the National Landscape Conservation System (NLCS) and the CSNM.
- Provide information on how historical and current human uses within the monument and on adjacent land have shaped the character of the monument.
- Emphasize the need for visitors to be aware of and respect the private property adjacent to monument lands.
- Increase appreciation of and respect for monument resources through interpretation.

IMPLEMENTATION CONSIDERATIONS FOR RECREATION

Decisions regarding future changes in recreation and visitor management in accordance with the proposed plan (including proposed site development, changes in visitor use, implementation of permit systems) would take many issues into consideration, including, but not limited to, the following:

- What type of resource damage is occurring (proliferation of campsites, human waste problems, trail creation, vandalism to historical or archaeological sites, etc.)?

- Are there conflicts with rare, sensitive, or threatened and endangered plant or animal species?
- Are there conflicts with other monument resources or natural ecosystem processes?
- Is the amount or type of use incompatible with protection of monument resources?
- Are opportunities for exploration and discovery negatively impacted by the number of people that a visitor encounters in a day?
- Can the problem be corrected through education?
- Would site development protect the resource at risk and accommodate current and increasing numbers of visitors?
- Would site development unnecessarily detract from the area's primitive character?
- Is visitor use negatively affecting adjacent landowners? Would site development mitigate this problem?

General Management

CSNM PROPERTY BOUNDARY AND OWNERSHIP

The Cascade-Siskiyou National Monument (CSNM) designation applies only to federally managed land. The external boundary depicted on the CSNM Analysis Area (Map 1) is for planning purposes only. Privately owned property within this outer boundary is not encumbered by, or in any way part of, the CSNM designation.

LAND TENURE ADJUSTMENTS

All currently administered public lands within the monument would be retained. The BLM could acquire additional lands within the greater monument boundary through purchase and exchange with willing participants. The BLM would utilize land acquisition to help meet the management goals and objectives described in this plan. Any land acquisition must result in a net gain of objects and values within the monument, such as wildlife habitat, threatened and endangered or sensitive species habitat, riparian or wetland areas, cultural or historic sites, or areas key to the maintenance of productive ecosystems. Any newly acquired lands within the greater monument boundary would become monument lands (Map 1) and fall under the provisions of the proclamation.

Lands may be acquired on a case-by-case basis through purchase, donation, conservation agreements/easements, or by exchange, consistent with existing land-use planning, regulation, and law. Lands may be acquired by exchange only where the public land involved in the exchange is located outside the CSNM.

MANAGEMENT OF NEWLY ACQUIRED LANDS

Newly acquired lands within the monument would be managed in accordance with the management direction for the surrounding land (e.g., management zone, emphasis area (Maps 4, 5)) and for the resource values present. In the interim, actions would be taken to protect resource values until the next plan revision. Newly acquired lands would be incorporated into existing resource monitoring procedures on adjacent or similar public lands. Transportation needs on any newly acquired lands would be evaluated and roads may be blocked or decommissioned to protect resource values.

FEDERAL RESERVED WATER RIGHTS

The presidential proclamation “reserved, as of the date of this proclamation and subject to valid existing rights, a quantity of water sufficient to fulfill the purposes for which this monument is established.” This statement signifies that BLM has a federal reserved water right with a priority date of June 9, 2000 for an amount of water that is necessary to support the plant and animal species identified in the proclamation (i.e. a variety of plant communities including wet meadows and riparian vegetation, rare and endemic plants, fresh water snails, three endemic fish species, butterflies, important populations of small mammals, reptile and amphibian species, ungulates, and numerous bird species including the threatened northern spotted owl). The federal reserved water rights would include all types of water sources necessary to meet monument purposes, such as springs on federal lands, and instream flows. The amount of water reserved would be based on requirements of the species involved. Quantification of the federal reserved water rights for the CSNM will need to be determined. The BLM reserves the right to assert its federal reserved water rights established by the CSNM proclamation.

SODA MOUNTAIN WILDERNESS STUDY AREA (WSA)

The Soda Mountain Wilderness Study Area (WSA) would continue to be managed under BLM’s *Interim Management Policy for Lands under Wilderness Review*, H-8550-1 (1995b). The Interim Management Policy applies only during the time a WSA is under wilderness review and until Congress acts on it. After Congress acts on the president’s recommendations for each WSA, a different policy will apply, depending on whether or not Congress designates the area as wilderness. Areas designated as wilderness will be managed under *Management of Designated Wilderness*

Areas (BLM Manual 8560) and under the regulations at 43 CFR 6300. Areas released from wilderness study will no longer be subject to the Interim Management Policy, and will be managed consistent with surrounding contiguous landscape of the CSNM.

RESEARCH NATURAL AREAS (RNAS)

Management plans for the Scotch Creek RNA (Appendix L) and Oregon Gulch RNA (Appendix M) were developed based on the criteria of the Oregon Natural Heritage Program. Implementation of these plans would require a site-specific environmental assessment that analyzes a full range of management alternatives as required by NEPA.

MARIPOSA LILY BOTANICAL AREA

The Mariposa Lily Botanical Area, a unique area west of Interstate 5 in the monument was established for *Calochortus greenei* (Green's mariposa lily) in 1995. The Mariposa Lily Botanical Area provides a core, relatively undisturbed, reference area that contains large populations of Green's mariposa lily. Future management activities within the Mariposa Lily Botanical Area will occur only if a neutral or beneficial effect for the lily will result.

NORTHWEST FOREST PLAN

The management objectives of the monument will be implemented in accordance with the overall Northwest Forest Plan goal of maintaining, protecting, and enhancing late-successional and old-growth habitats.

AQUATIC CONSERVATION STRATEGY

All management actions/treatments throughout the monument would be consistent with the Aquatic Conservation Strategy (ACS). The ACS, as amended is an integral part of the Northwest Forest Plan. It was developed to restore and maintain the ecological health of watersheds and aquatic ecosystems on public lands. The ACS includes nine objectives (USDA/ USDI 1994b; B-11) and four components (riparian reserves, key watersheds, watershed analysis, and watershed restoration (USDA/USDI 1994b; B-12)). Over half of the monument (55 percent of the BLM lands) is located in the Jenny Creek Watershed, which was identified as a Tier 1 Key Watershed under the Northwest Forest Plan (USDA/USDI 1994b). Tier 1 Key Watersheds contribute directly to the conservation of at-risk fish species and have a high potential of being restored as part of a watershed restoration program.

SPECIAL STATUS SPECIES

Special status species are plant and animal species that meet the following criteria:

1. Species proposed for listing, officially listed, or candidates for listing as threatened or endangered under the provisions of the *Endangered Species Act* (ESA);
2. Species listed or proposed for listing by Oregon; and
3. Species designated by the BLM state director as sensitive, assessment, or tracking species.

Special status species are managed in accordance with the ESA, and bureau standards and policies for special status species (BLM Manual 6840; OR/WA Instruction Memorandum OR-91-57 and OR/WA Instruction Memorandum 2003-054). Within the monument, surveys for special status species would be conducted prior to any ground disturbing activity. If special status species are found and the long-term impacts of the proposed activity would adversely affect the population, the species would be buffered from the activity, or the activity modified to reduce impacts.

Species formerly listed as "Survey and Manage" under the Northwest Forest Plan, have been removed from any special status listing, or have been moved under the policies of the Special Status Species Program in *To Remove or Modify the Survey and Manage Mitigation Measure Standards and Guidelines in Forest Service and Bureau of Land Management Planning Documents within the Range of the Northern Spotted Owl* (USDA/USDI 2004b,c).

Appendix N in this FEIS provides a list of special status plant species in the monument.

ESA Species

There are three species in the monument listed as threatened or endangered under the ESA: Gentner's fritillary (endangered), the northern spotted owl (threatened), and the bald eagle (threatened). The 2003 US Fish and Wildlife Service programmatic biological opinion for southwest Oregon (Medford BLM & Rogue/Siskiyou National Forests) addresses the effects from management activities that could potentially occur within the monument and establishes conservation measures such as seasonal restrictions. The proposed monument plan, including conservation measures described in Appendix N, is consistent with determinations for the listed species. However, any National Fire Plan Grants or Title II grants to private land owners within the boundaries of the monument will be addressed on a project-by-project level.

Bureau Sensitive, Assessment and Tracking Species

According to existing policy, the BLM will protect, manage, and conserve sensitive species and their habitats in a manner that will not contribute to the need to list any of these species under the ESA. The minimum level of protection provided for sensitive species will include clearance inventories, monitoring to determine trends, and analysis of effects in environmental documents.

BLM assessment species are a category separate from sensitive in that these species are not presently eligible for federal or state listing, but are of concern in Oregon, and may need some protection or mitigation in BLM activities. Clearance surveys will be done subject to limitations in funding, and impacts will be assessed in environmental documents. Protection recommendations for assessment species will be considered on a case-by-case basis in balance with other resource considerations.

BLM tracking species are species that no longer need active management (e.g., former sensitive species), or species for which more information is needed to determine their status. Assignment of protection measures for these species is a discretionary action per BLM policy.

FISH AND WILDLIFE POPULATIONS

The Oregon Department of Fish and Wildlife (ODFW), the U.S. Fish and Wildlife Service and the National Marine Fisheries Service have responsibility for the management of all fish and wildlife populations throughout Oregon (setting desired population levels, protecting special species, setting hunting/trapping laws and harvest limits, licenses and fees, etc.). Federal agencies work cooperatively with state agencies to ensure that federal habitat management is consistent with ODFW fish and wildlife population management goals.

AIR QUALITY MANAGEMENT

The topographic and physical characteristics of the Cascade-Siskiyou National Monument, as well as it's location in southwestern Oregon, position it to be directly affected by both human caused and natural forms of air pollution. The following factors in combination with one another may impact visibility and affect sensitive vegetative communities within the CSNM:

- The proximity of Interstate 5;
- Population expansion in Jackson County within the Ashland/Medford Air Quality Management Area (AQMA);
- Industrial development within the Rogue River Valley and Klamath Basin; and
- Seasonal weather patterns that have historically trapped air pollutants in the Rogue River and Klamath River Valleys.

Mobile sources (i.e. automobiles and diesel trucks) have been targeted as a major source of pollution requiring control along the I-5 Corridor, part of which intersects the monument. The warm dry summer climate combined with increasing mobile source emission due to population increases, could lead to the development of photochemical smog. Although the potential exists, local state air regulatory agencies have not identified sufficient pollution levels to warrant protection under the National Ambient Air Quality Standards.

During summer and late winter months temperature inversions often prompt air stagnation advisories. These inversions trap pollutants at the lower elevations for extended periods of time resulting in the AQMA reaching Non-Attainment status for Particulate Matter (PM 10). The AQMA has been in attainment status for at least six (6) years. Additionally, smoke from wildland fires has had a direct effect on the CSNM and adjacent Rogue and Klamath Basins.

The proposed level of prescribed fire use identified for the CSNM will come under the direction of the Oregon Smoke Management Plan. The use of dispersion, dilution and avoidance techniques will be use in order to minimize smoke impacts on the Medford-Ashland Air Quality Management Area, City of Klamath Falls, City of Yreka in California, Mt. Ashland Ski Area, and the I-5 Corridor.

WATER QUALITY MANAGEMENT

The Oregon Department of Environmental Quality (ODEQ) recognizes the BLM as the Designated Management Agency for implementing the Clean Water Act on BLM-administered lands in Oregon. Pursuant to a Memorandum of Agreement (2003) between the BLM and DEQ, water quality standards are expected to be met through the development and implementation of water quality restoration plans, best management practices (BMPs), and aquatic conservation strategies. The BLM manages BLM-administered lands to protect, restore, and maintain water quality so that federal and state water quality standards are met or exceeded to support beneficial uses, in accordance with applicable laws and regulations.

The BLM is implementing the *Forest Service and Bureau of Land Management Protocol for Addressing Clean Water Act Section 303(d) Listed Waters* (USDA/USDI 1999). Under the Protocol, the BLM would continue supporting ODEQ's efforts to develop total maximum daily loads (TMDLs) and water quality management plans for water bodies with limited water quality within the CSNM. ODEQ has set a target date of December 31, 2005 for completion of TMDLs for 303(d) listed waters in the Middle Rogue and Upper Klamath Subbasins which include the CSNM (ODEQ 2004). The BLM would develop water quality restoration plans specific to BLM-administered lands, which would be incorporated by reference into ODEQ's water quality management plans. Implementation of water quality restoration plans, BMPs, the Aquatic Conservation Strategy, and effectiveness monitoring would ensure that TMDLs are being met on monument lands.

BEST MANAGEMENT PRACTICES

Site-specific best management practices (BMPs) would be developed as required by the federal Clean Water Act in order to reduce non-point source pollution to the maximum extent practicable. Where appropriate, project planning would incorporate the BMPs developed in the *Medford District BLM Record of Decision and Resource Management Plan* (USDI 1995a).

NATIVE AMERICAN USES

The lands within the monument were formerly inhabited by the Takelma Indians. The Shasta Indians and the Klamath Tribe also utilized the area. Following the Rogue Indian Wars in 1856, surviving Takelma and Shasta Indians were relocated to reservations in northern Oregon, where their descendants are members of two federally recognized tribes: the Confederated Tribes of Grand Ronde and the Confederated Tribes of Siletz. Shasta natives also managed to survive south of the border in California; descendants of the Shasta Indians are federally recognized as the Quartz Valley Rancheria.

There are no treaty reserved rights within the monument for any of these tribes. However, descendants of the Takelma and the Shasta, and the tribal groups to which they belong today, are active in promoting the heritage and current welfare of their members. Traditional use areas, as well as archaeological sites reflecting tribal histories, exist within the monument. The federally recognized tribes identified above would be contacted regarding any projects that might affect cultural resources representing their heritage.

ARCHAEOLOGICAL AND CULTURAL SITE PROTECTION

Archaeological Sites

Archaeological sites within the CSNM would be protected in accordance with applicable laws and regulations. Among other laws and regulations, the *National Historic Preservation Act* (NHPA) requires agencies to consider the effects of their actions on significant historic sites. Section 106 of the NHPA provides a process for identifying, evaluating, and assessing effects of federal actions on cultural resources.

Cultural Resource Sites

While many of the historic and pre-historic sites within the monument are known, many of the physical characteristics, oral histories, and folklore of these sites remain largely undocumented. Cultural resources within the monument would be identified, documented, and protected. Public education and interpretation are tools for protecting these resources through increased awareness of and appreciation for both archeological and historic resources.

Laws specifically related to the protection of pre-historic and historic cultural resources include the Antiquities Act of 1906, the National Historic Preservation Act of 1966, as amended, the Archaeological Resources Protection Act of 1979, as amended, the Native American Grave Protection and Repatriation Act (NAGPRA) of 1990, and Executive Order 11593 Protection and Enhancement of the Cultural Environment (1971).

Research and Education

Applications for Cultural Resource Use Permits would be analyzed on a case by case basis. These may include applications for excavation, research, or field school projects. Each application must include documentation detailing a methodological/ theoretical framework appropriate to the work proposed, a timeframe for project work and completion, and professional methods for reporting project results. All projects must be compatible with monument goals and objectives, established policy, and requirements applicable to the management of the cultural resources involved.

Proposed work may be modified through limitations or terms and conditions. Applications that fail to meet minimum qualifying criteria specified, either upon initial receipt or through failure to respond adequately to a request for missing information, may be rejected without further review.

Historic Trails

Congress identified and designated many significant National Historic Trails through the National Trails System Act (NTSA). This act was created to preserve the nation's historic trails and to ensure that visitors have a meaningful recreational experience. A National Historic Trail retraces trails or routes of travel with national historical significance to the greatest extent possible. Within the monument, many of these trail resources are located on private lands. Unless these resources are certified or an agreement is reached with the land owner, historic trails on private lands are not accessible to the public. These trails include the Applegate Branch of the California National Historic Trail, and the California/Oregon Wagon Trail, also recognized as the Ewing Young Route State Historic Trail (Map 26).

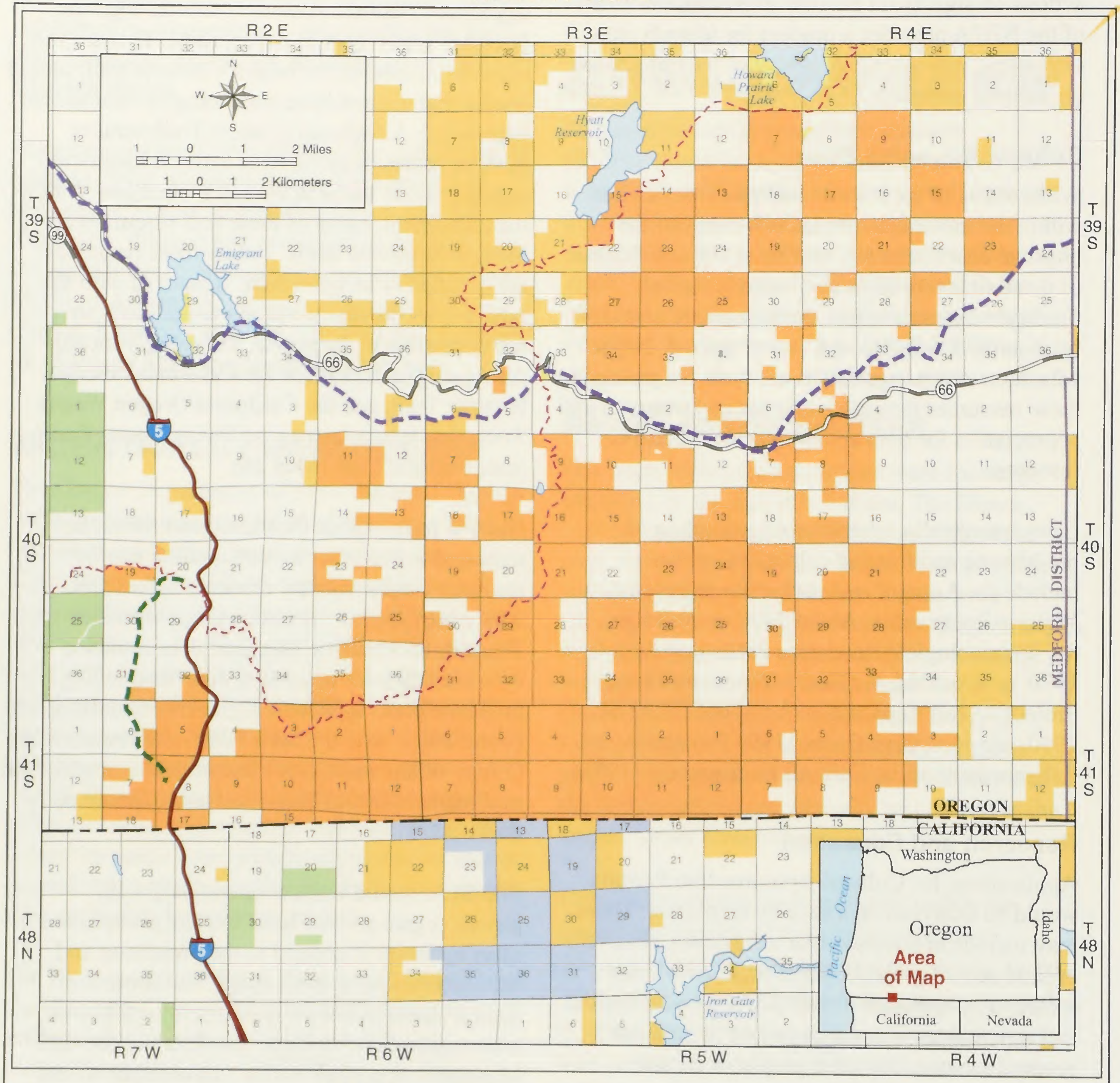
Historic trails within the monument would be managed to preserve the surrounding natural resource values, cultural resource values and, where appropriate, recreational opportunities. These trails would be managed in accordance with management objectives described in this proposed plan, applicable legislative mandates, and coordination with the State Historical Preservation Office. Where trails cross federal lands, appropriate trail markers would be erected and maintained by the BLM.

The BLM would work cooperatively with private organizations, local interest groups, and other agencies interested in the protection and interpretation of historic trails. The context of historic trails would be protected by a 500 foot wide management corridor centered on the trail. Management actions within this corridor would be evaluated for impacts to the trail setting and would be compatible with the protection and interpretation of trail resources.

Applegate Trail

Between 1841 and 1860, more than 200,000 emigrants traveled the California Trail. The Applegate Trail, a branch of the California National Historic Trail, was developed by Oregon pioneers as a southern route to Oregon and a way of avoiding the treacherous descent of the Columbia River. Approximately one mile of the Applegate trail crosses public land in the monument.

Map 26: Cascade-Siskiyou National Monument Historic Trails



LEGEND

Historic Trail

- - - - Applegate Trail

- - - - Oregon-California Wagon Trail/ Ewing Young Route

—— BLM District Boundary

- - - - Pacific Crest Trail

BLM Administered Land

🟧 Cascade-Siskiyou National Monument

🟨 Other

Other Administered Land

🟩 Forest Service

🟨 Bureau of Reclamation

🟦 State

⬜ Private or Other

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Oregon/California Wagon Trail

The Oregon/California Wagon Trail served as the region's main north and south travel route. This route was originally established by Native Americans as a trade route. In 1827, Peter Skene Ogden made his way north over this same route during his exploration for the Hudson Bay Company. Today the trail is more commonly known as the Ewing Young Route, one of 16 historic trails recognized by the State of Oregon in an effort to "develop a statewide program to research, recognize, and promote Oregon's historic trails as heritage tourism resources" (*HB 2966*, 1995). The BLM would cooperate with the State of Oregon in management of the Ewing Young Route. Approximately 0.7 miles of the Ewing Young Route crosses public lands within the monument.

NATIONAL SCENIC TRAILS

The National Trails System Act of 1968 was created to ensure that visitors enjoy a meaningful recreation experience as well as to preserve the trail resources. The National Trails System Act identified and designated both National Historic and National Scenic Trails. A Scenic trail is an extended trail offering maximum outdoor recreation potential allowing visitors to experience scenic, historical, natural, and cultural resources. The National Scenic Pacific Crest Trail (PCT) is the only designated hiking trail within the CSNM. Of the 18.8 miles the PCT in the monument, 12.9 miles are located on public land (Map 2). Agreements with private landowners allow for access through private lands.

SCIENCE AND RESEARCH

The primary purpose for establishing the CSNM is to protect the scientific and historic resources described in the proclamation. The monument landscape offers outstanding opportunities for the study of specific resources described in the proclamation. In addition to the study of specific resources, the monument landscape allows the study of important issues, such as understanding ecological change over time; increasing our understanding of the interactions between humans and their environment; and improving land management practices. By allowing research activities to take place in the monument, the BLM would be able to protect resources using the best possible information.

Science and research proposals submitted by other agencies, non-governmental organizations, or individual researchers would be supported and encouraged, but intrusive or destructive investigations would be carefully reviewed to avoid conflicts with the BLM's responsibility to protect and preserve scientific and historic monument resources. The monument staff would consider whether the proposed research could be conducted in a manner consistent with the protection of monument resources, and whether the methods proposed are the minimum necessary to achieve the desired research objective. The collection of monument resources such as organisms or other natural resources could be authorized in cases where the collection is necessary to meet research objectives and that such collections would not threaten the continued persistence or recovery to historic abundance of "objects of biological interest" or negatively impact ecological processes. All research activities involving collections would require special-use permits.

MONITORING

Monitoring is an essential component of natural resource management because it provides information on changes in resource use, conditions, processes, and trends. Monitoring is an integral component of the monument's adaptive management strategy (Appendix C), as it provides information on the effectiveness of management activities and strategies. The implementation of this plan will be monitored to ensure that management actions follow prescribed management direction (implementation monitoring), meet desired objectives (effectiveness monitoring), and are based on accurate assumptions (validation monitoring).

Some effectiveness monitoring and most validation monitoring will be accomplished by formal research. Close coordination and interaction between monitoring and research are essential for this type of management. Data obtained through systematic and statistically valid monitoring can be used by scientists to develop research hypotheses related to priority issues. In addition, the results obtained through research can be used to further refine protocols and evaluate the effectiveness of implementation of this plan. Ongoing monitoring projects are detailed in Appendix J.

COLLECTIONS/ SPECIAL FOREST PRODUCTS

The proclamation specifically prohibits the removal of monument features. Removal of features includes, but is not limited to, the collection of any monument resources such as rocks, minerals, petrified wood, fossils, archaeological and cultural items, plants and parts of plants, fish and animals not regulated by ODFW, insects or other invertebrate animals, bones, waste, and other products from animals. Christmas tree cutting is prohibited within the monument. The above prohibitions shall not be deemed to diminish the responsibility and authority of the State of Oregon for the management of fish and wildlife, including the regulation of hunting and fishing.

Exceptions would include collections authorized by permit in conjunction with authorized research, education, or management activities; the collection of fruits, nuts, berries, and mushrooms for personal non-commercial use, not to exceed one gallon per day; the collection of certain natural materials by Native American under BLM permit; the collection of antlers or horns as provided by ODFW regulations; and the collections of dead and down wood for immediate use in campfires, where campfires are allowed.

OFF-HIGHWAY VEHICULAR (OHV) TRAVEL

For the purposes of protecting the resources for which the CSNM was designated, all mechanized and motorized modes of surface travel, including but not limited to, OHVs, motorcycles, all-terrain vehicles, snowmobiles, bicycles, and tractors shall be confined to the surface of designated open roads except for emergency, administrative, or other authorized use.

HAZARDS TO FACILITIES, VISITOR, AND PUBLIC SAFETY

Removal of trees from within the monument may take place only if clearly needed for ecological restoration, authorized facility maintenance, or public safety. The felling of trees may occur where select trees endanger facilities, visitor, or public safety. Such situations are anticipated along roads, utility rights-of-way, communication sites, trails, property lines, parking areas, and campgrounds and high visitor use areas within the Hyatt Lake Recreation Complex. These trees may be sold commercially only after it has been determined that they are not needed for riparian enhancement, coarse woody debris, or other resource values within the monument.

PUBLIC OUTREACH AND EDUCATION

The overall goal for the public outreach and education in the CSNM is to enhance protection of the monument's values and resources through increased awareness and appreciation. Public outreach and education for the CSNM would focus on adjacent landowners, local communities, and monument visitors. The level of public outreach and education for the CSNM would correlate with the types of BLM management activities and the amount of visitor use in the monument.

Adjacent Landowners and Local Communities

The checkerboard nature of land ownership adjacent to CSNM boundaries necessitates a commitment by BLM to establish communication and cooperation with adjacent landowners and local communities. The BLM would engage in public outreach activities designed to keep adjacent landowners and local communities informed of new developments or activities related to the CSNM. Such outreach efforts would be designed, for example, to inform and educate the public about the goals, objectives, and operation of different management activities as needed.

Given that some on-the-ground management activities in the CSNM may be visible to the surrounding community and to monument visitors, the BLM would strive to build relationships with the surrounding community partnerships and collaborative projects. When possible, the BLM would use existing community resources for the development of outreach or educational materials. The BLM could engage the surrounding communities in efforts to protect, enhance, and restore the resources of the CSNM through hands-on stewardship such as monitoring, restoration projects, and scientific research.

In many cases, management activities designed to protect and restore monument resources may be similar to the management objectives of adjacent landowners. The BLM would identify and use common land-management goals as a basis for developing voluntary collaborative projects with adjacent landowners of the CSNM. These projects would be designed to promote the protection, restoration, and enhancement of resources in the monument and on adjacent non-federal land. For example, the long-term effectiveness of noxious weed control efforts in the monument would increase if the BLM and adjacent landowners worked together on this problem. The reduction of fire hazard in the monument and on adjacent non-federal lands is another example of a common goal. The BLM would keep the surrounding community informed of management activities in the monument and, when possible, may assist in providing technical or informational support to adjacent landowners wishing to engage in similar activities on non-federal land.

WILDLAND FIRE SUPPRESSION

The BLM has a contract with the Oregon Department of Forestry (ODF) to provide fire prevention, detection and suppression services. Due to ownership patterns and logistical constraints, the use of wildland fire to meet resource objectives is not possible. Areas within the CSNM that require special suppression methods designed to minimize damage to unique habitat and resources are listed in Appendix O.

An integrated Fire Management Plan (FMP) is currently being developed for the Medford District BLM and surrounding areas. This cooperative planning effort will be based on the resource management objectives defined in land management plans, local, state, and federal law, and interagency fire policy. The FMP will incorporate the CSNM resource and management objectives identified in this plan and the subsequent Record of Decision.

STABILIZATION, REHABILITATION, AND RESTORATION FOLLOWING WILDLAND FIRE

Wildland fire and subsequent plant community changes are an integral part of natural ecosystem processes in the CSNM. Stabilization, rehabilitation and restoration efforts would be focused on areas where fire suppression efforts have resulted in resource damage. Rehabilitation efforts in these areas would include the following design features:

- Seeding or waterbar construction may be necessary to prevent erosion and weed invasion on fire lines constructed during suppression activities.
- When seeding is necessary in order to prevent the establishment of non-native grasses and invasive plants in disturbed areas, native grasses and forbs suitable to the plant community or sterile, non-persistent, non-natives would be used.
- Weed-free plant material could be used as mulch to offset erosion or create suitable environment for seedings and plantings.

In burned areas undisturbed by fire-fighting efforts, fire rehabilitation efforts would be limited. Management activities would only take place in cases where an interdisciplinary team determines that intervention is necessary in order to facilitate natural successional processes, protect monument resources, or to provide for public safety. In many cases, this may mean allowing the area to recover without intervention.

A site-specific analysis of the burned area would precede restoration efforts. Guidelines would be developed on a site-specific basis to ensure consistency with the goals and objectives outlined in this management plan. Salvage logging would not be considered as a management option. Restoration efforts for burned areas not impacted by suppression areas may include the following:

- Areas with a high component of weed species may be seeded with native grasses and forbs as a restoration measure.
- Tree planting could be considered in areas where reforestation does not occur naturally. The species mix of seedlings planted would mimic previous site conditions where possible.

- Burned areas will be closed to livestock grazing for at least two growing seasons following the season in which the fire occurred to promote recovery of burned perennial plants, prevent noxious weeds or other non-native invasive species, reduce the risk of erosion and associated effects to riparian areas and stream systems, and to protect monument resources and natural ecosystem processes. An interdisciplinary evaluation is required at the end of the second growing season to determine whether additional livestock exclusion is required to meet rehabilitation objectives. Livestock closures for less than two growing seasons may be justified, on a case-by-case basis, based on sound resource data and experience.
- In order to provide for human safety, snags and logs could be relocated where necessary to reduce hazards along roads, trails and in or adjacent to campgrounds. In most cases, woody material would be left on site. In cases where the number of snags and logs felled for human safety exceeds the large wood requirements on site, these excess trees and logs may be stockpiled for restoration projects (in-stream structures or large wood placement in areas where this ecological component has been removed in the past).

FUEL HAZARD REDUCTION

Fuel hazard reduction involves removing the accumulation of fuels (dead and live vegetation) in order to reduce the threat, spread, or intensity of a wildland fire. Throughout the CSNM, the reduction of hazardous fuels would generally occur as a byproduct of plant community restoration treatments. These treatments are described in the DEA and OGEA management sections. A future, site-specific analysis may identify areas along roads, irrigation ditches, private land, or structures that should be treated specifically for fuel hazard reduction. These treatments would be aimed at protecting monument resources and private property by reducing hazardous fuels in strategic areas. Treatments that would conflict with the resource management objectives described for the OGEA and DEA would not take place.

VISUAL RESOURCE MANAGEMENT

Visual Resource Management (VRM) consists of (1) the inventory and planning actions taken to identify resources; (2) establishing objectives for managing those resources; and (3) the management actions taken to achieve the visual management objectives. VRM inventory classes were established by BLM Manual Handbook H-8410-1 (Visual Resource Inventory). Criteria used to determine VRM classes are: scenic quality ratings, public sensitivity ratings, and distance zone-seen areas.

Class I is assigned to those areas where a management decision has been made previously to maintain a natural landscape. This includes areas such as national wilderness areas, the wild section of national wild and scenic rivers, and other congressionally and administratively designated areas (VRM Manual 8410-1, Section V, pg. 5). Based on these criteria, the Soda Mountain Wilderness Study Area will be managed as VRM Class I and the remainder of the monument will be managed as VRM Class II.

The objective of Class II is to retain the existing character of the landscape. The long-term management objectives in the CSNM focus on the preservation of the natural landscape. Past management activities, both federal and non-federal have pre-empted the existence of a natural landscape. Therefore, the CSNM landscape outside the WSA will be managed to meet VRM Class II objectives.

VALID EXISITING RIGHTS

The proclamation states, “The establishment of this monument is subject to valid existing rights.” Valid existing rights (VERs) include a variety of BLM authorizations such as right-of-way grants, leases, permits, reciprocal agreements, and withdrawals. Private land owners within the monument are assured access to their property as existing law and policy requires the BLM to provide reasonable access to non-federally owned land that is surrounded by public land. In addition to the language found in the proclamation, private property owners are assured rights to their property under the Alaska National Interest Lands Conservation Act (ANILCA) of 1980. ANILCA, Sec. 1323 (b), states “Notwithstanding any other provision of law, and subject to such terms and conditions as the Secretary of Interior may prescribe, the Secretary shall provide such access to non-federally owned land surrounded by public lands managed by the Secretary under the Federal Land Policy and Management Act (FLPMA) of 1976 (43 U.S.C. 1701-82) as the Secretary deems adequate to secure to the owner the reasonable use and enjoyment thereof: Provided, that such owner comply with the rules and regulations applicable to access across public lands."

Linear Rights-of-Way

Proposed management would continue to make BLM-administered lands available for needed rights-of-way consistent with local comprehensive plans, Oregon statewide planning goals and rules, and protection of monument resources. Any approved rights-of-way for hydroelectric developments would be consistent with the Northwest Power Planning Council guidance, which recommends prohibiting future hydroelectric development on certain rivers and streams with significant fisheries and wildlife values. Land use allocation guidance pertaining to the CSNM is as follows:

- Allocation of lands to existing rights-of-way corridors and communication sites would continue (Appendix P).
- Subject to all VERs, with the exception of buried lines within the prism of existing roads, new rights-of-way in the CSNM would be minimized. Rights-of-way may be granted when no feasible alternate route or designated rights-of-way corridor is available, but every measure would be taken to minimize negative impacts to monument resources.
- Rights-of-way should avoid adverse impacts that retard or prevent attainment of Aquatic Conservation Strategy (ACS) objectives. Where legally possible, adjust existing rights-of-way to eliminate adverse effects that retard or prevent the attainment of the ACS.
- In cases where existing rights-of-way are found to negatively impact monument resources, BLM will work with authorized holders to reduce those impacts where feasible.
- The Western Regional Corridor Study (Clayton 1992) developed a series of maps that depict existing and proposed corridors serving the utility, transportation, and communications industries in the 11 western states. The Oregon map shows three existing corridors within the boundary of the CSNM as Agency Designated Corridors. All three of these corridors have existing authorized facilities within them. Facilities can include electric power lines, gas or oil pipelines, water pipelines or canals, communication lines, transportation routes, etc. These Agency Designated Corridors would take precedence for future facility development over non-designated areas. Any applications for new facilities within a designated corridor would be thoroughly reviewed and analyzed for potential impacts to monument resources.
- Current levels of maintenance, access, and other established uses consistent with previously identified objectives and VERs would continue.

New applications for utility rights-of-way within the monument are driven by the public. It is anticipated that most new requests would be tied to residential development of private land within the greater monument boundary. This type of action would generally involve requests for power or phone service to private property and would be considered small-scale projects. Most often, this type of utility line is now buried along the edge of existing roads.

Requests for new utility line corridors involving major projects are not anticipated in the foreseeable future. However, new requests may be authorized in the existing corridors where the proposed use is compatible with the existing facilities. For example, in the past, BLM authorized the placement of a new fiber optic line within one of the corridors utilizing the existing structures for the new line. In this case the new use was compatible with the original authorization, and the existing infrastructure could be utilized to accommodate the new use.

Few new road ROWs are anticipated as most are already in place in the as a result of past timber practices on all land ownerships. Most private lands have major access routes completed and very limited new road construction across BLM lands is expected in the future.

Withdrawals

Withdrawals protect lands with important resource values and/or significant levels of investment by withdrawing them from the operation of the public land and mineral laws. They are a tool the government uses to avoid irreparable damage to important resources that may be caused by nondiscretionary activity on public lands. Developed recreation or administrative sites are generally protected under a withdrawal action.

Prior to the designation of the monument, certain areas had been placed under formal land withdrawals in order to provide the lands with this level of protection. The current withdrawals in the monument are identified in Appendix P. The monument proclamation segregated all federal lands and interests in lands from all forms of entry, location, selection, sale, or leasing or other disposition under the public land laws, including but not limited to withdrawal from location, entry, and patent under the mining laws, and geothermal leasing, other than by exchange that furthers the protective purposes of the monument. All land withdrawals made prior to the monument designation will be reviewed on a case by case basis to determine whether or not they should be continued, modified, or revoked.

Communication Sites

Existing communication site authorizations on Soda Mountain and Chestnut Mountain would continue. No new facilities would be built at the existing communication sites. Modifications to existing individual facilities (i.e., buildings) could be made if the proposed use does not increase the size (footprint) of the current authorized development and there are no interference problems for the other authorized users. For example, the addition or replacement of a new transmitting or receiving device (e.g., antennae) on an existing tower structure would be considered if the proposed device was consistent with the other existing electronic devices in terms of size, visual characteristics, and frequency compatibility. The BLM plans to complete a communication site survey for the Soda Mountain site in 2005. A comprehensive communication site management plan addressing site efficiency, visual resources, and impacts of new technology is planned for 2006 (dependent on funding). The BLM could permit modifications, such as a new device, following the completion of a site specific management plan. The Soda Mountain communication site access roads (40-3E-21.1, 40-3E-21.2) would be improved (rocked) to reduce erosion, maintained to BLM standards, and gated at the junction of 40-3E-21.1 and 40-3E-21.2.

No new communication sites would be developed in the CSNM.

MINERALS

The presidential proclamation withdrew monument lands from "location, entry and patent under the mining laws, and from disposition under all laws relating to mineral and geothermal leasing, other than by exchange that furthers the protective purposes of the monument." The proclamation did not prohibit the use of common mineral materials from existing rock quarries in the monument. Common mineral materials would be available from existing quarries for extraction, processing, and transport for projects approved for administrative (BLM) use within the CSNM. Approved projects would have to mitigate potential damage to aquatic resources, stream channels, and riparian habitat. If mitigation is not possible, the project will not be approved.

SUPPLEMENTAL RULES

Following the completion of this management plan and the subsequent Record of Decision, the BLM would establish supplemental rules to govern conduct on all public lands within the CSNM. The BLM would be establishing these supplementary rules for the protection of persons, property, public lands, and monument resources, to further the direction and guidance contained in the presidential proclamation, and to implement decisions made in the management plan, as provided for in 43 CFR 8365.1-6. The supplementary rules would be published as a Federal Register notice and are a necessary tool for law enforcement officers to enforce management direction for the CSNM.

Chapter 3
Environmental Consequences

CHAPTER 3
Environmental Consequences

INTRODUCTION

Chapter 3 analyzes the environmental effects of implementing the management proposed in Chapter 2. Since this proposed plan describes an overall management framework, and in most cases does not propose specific on-the-ground projects or actions, the environmental consequences are often expressed in comparative, general terms. Quantitative analysis has been included when possible based on specific decisions proposed in Chapter 2. In most cases, subsequent analysis would be required to implement resource management decisions. More detailed or site-specific studies and appropriate environmental documents will be prepared in compliance with the National Environmental Policy Act (NEPA) and its implementing regulations, as needed.

TYPES OF IMPACTS

Impacts analyzed in this chapter include the direct, indirect, and cumulative effects of the proposed actions to the extent they were identifiable for analysis. Direct effects are closely linked to specific management activities and occur at the same time and place as the action. Indirect effects are reasonably foreseeable effect that are also caused by management actions, but occur later in time or are farther removed in distance.

Cumulative effects occur when there are multiple effects on the same values. They are incremental effects of proposed activities or projects, when combined with past, present, and future actions. As stated in 40 CFR 1508.7, a "... 'cumulative impact' is the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time...." The cumulative effects discussed in this chapter address resources for which direct and indirect impacts have been described earlier.

NEPA requires that the analysis of a Proposed Action in an Environmental Impact Statement address the following three topics:

1. The relationship between short-term uses of the environment and the maintenance and enhancement of long-term productivity: Short-term impacts occur during or immediately after project placement and may continue for a period of up to five years. Long-term impacts occur beyond the first five years.
2. Irreversible or irretrievable commitments of resources: Irreversible commitments of resources are the result of actions in which changes to resources are considered permanent. Irretrievable commitments of resources result from actions in which resources are considered permanently lost. A discussion of these impacts is included in the Irreversible or Irretrievable Commitments of Resources section at the end of this chapter.
3. Unavoidable adverse effects: These are the effects that cannot be avoided if the proposal and mitigation measures (incorporated as the design features of this plan) are implemented. These effects are described throughout this chapter in each of the resource and use impact sections. Mitigation and/or the nature of the planned actions are designed to minimize these effects.

ANALYSIS ASSUMPTIONS AND GUIDELINES

The following assumptions and guidelines were used to guide and direct the analysis of environmental consequences:

1. This proposed plan would be implemented substantially as described in Chapter 2.
2. The BLM would have sufficient funding and personnel to implement the plan.
3. The planning period for the analysis is the next 10 years. Short-term impacts are those that would occur during the first five years of plan implementation. Long-term impacts are those that would occur beyond the first five years.

4. Measures would be taken to protect and encourage recovery of species listed as federally endangered or threatened.
5. Current upward trends in recreation use would continue.
6. Specific actions to protect human life would be taken regardless of the management criteria in this plan.
7. Livestock grazing would be governed by applicable laws and regulations as described in Chapter 2. In circumstances where livestock grazing is found to be incompatible with the protection of monument resources, grazing practices would be modified or eliminated.
8. The plan would be subject to valid existing rights and other existing authorizations in accordance with applicable laws and regulations.
9. Any projects authorized by the BLM would be required to obtain necessary permits and authorizations from other federal, state and local agencies.
10. Research would continue to be funded, at least at current levels.
11. Acreages reported in the analysis are Geographic Information System (GIS) numbers and not legal acreages.
12. Site-specific analysis, including any required surveys, would precede management actions not described in sufficient detail in this plan.

MITIGATION

Mitigation is important in the design and implementation of any action. In general, mitigation is a measure taken to cause an action to become less harsh or less severe. From the CEQ Regulations (40 CFR 1508.20), mitigation includes:

- Avoiding the impact altogether by not taking a certain action or parts of an action
- Minimizing impacts by limiting the degree or magnitude of the action and its implementation
- Rectifying the impact by repairing, rehabilitating, or restoring the affected environment
- Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action
- Compensating for the impact by replacing or providing substitute resources or environments

Mitigating measures have been incorporated and evaluated for activities and decisions described in Chapter 2 of this plan and throughout the discussion of environmental consequences in this chapter. For the actions analyzed in this plan, mitigating measures are generally incorporated into the proposed actions described in Chapter 2.

PROPOSED PLAN IMPACT ANALYSIS

The following impact analysis describes the effects of the management described in this plan on both monument resources and existing uses. An overall discussion of cumulative impacts including actions outside the scope of this plan is included in the **Cumulative Effects** section at the end of this chapter. This analysis can be compared to the effects analysis of the original management alternatives described in Chapter 4 of the Draft Environmental Impact Statement (DEIS).

Effects on the Old-Growth Emphasis Area

INTRODUCTION

The Old-Growth Emphasis Area (OGEA) consists of monument lands that are currently functioning as, or are capable of becoming, old-growth or late-successional forests. Mixed conifer forests, pine forests, and high elevation white fir forests are found throughout the monument in a mosaic of various species, ages and structures. Many of the recent impacts to the OGEA are associated with fire exclusion and timber harvest: these have dramatically changed the structure and composition of OGEA forests and have reduced their suitability as habitat for wildlife species associated with late-successsional forests. A small portion of the OGEA (4 percent) is located within the wildland-urban interface. Management concerns in these areas include the risk of wildland fires spreading to residential properties.

SUMMARY OF EFFECTS

The primary management objectives for the OGEA are the protection and enhancement of existing habitat for late-successional species; the enhancement of local and regional connectivity for late-successional species; and reduction of risk from wildland fires in the wildland-urban interface. Proposed management would help achieve these objectives through thinning projects on approximately 22 percent of the OGEA landscape. The use of prescribed fire in some of these projects would also help meet the primary management objectives. Indirectly, treatments will help enhance protection and resilience for existing old-growth and late-successional forests by improving forest health and reducing fire hazard on surrounding OGEA lands.

Over time, habitat connectivity should improve as larger blocks of late-successional habitat are created. However, in areas where treatments do not take place, forest stands would continue to be susceptible to major disturbance events such as insect infection and high severity wildland fire. Adaptive management, including monitoring of proposed treatments and pilot studies in Habitat Type 2 could help identify effective ways to reduce these risks across the OGEA in the future.

Reductions in road density, continued noxious weed treatments, potential modifications to livestock grazing practices, and improved conditions in riparian areas would all help increase the quality forest habitat and connectivity for late-successional species. In addition, continued management of Hyatt Lake as a recreation area would have direct impacts on forest habitat through the removal of hazard trees throughout the campground and surrounding areas.

DIRECT AND INDIRECT EFFECTS OF PROPOSED ACTION

OGEA Management

Approximately 22 percent (5,665 acres) of the OGEA would be managed through restorative thinning and prescribed fire (where appropriate) to reduce stand density. Treatments would almost exclusively take place in stands that are not currently functioning as late-successional habitat. Long-term management activities would help these stands approach the historic structural and compositional levels of functional late-successional forests. These treatments would increase resiliency to disturbance events such as fire and beetle infestation at the stand level. The primary benefits would be seen in the WUI and Connectivity areas where the majority (58 percent) of these treatments would be concentrated (Map 13). Beneficial effects would also be seen in all Habitat Type 3 stands that are treated.

Over time, these management activities will have the following positive effects: improvement in habitat connectivity across the landscape, particularly in the area of connectivity concern (Map 8); the reintroduction of fire into these ecosystems will hasten the return of historic wildlife habitat conditions; promotion of late-successional conditions and wildlife species associated with these forests (e.g., northern spotted owl and pileated woodpecker) will benefit from larger areas of late-successional forest habitat.

Habitat Type 1 and 2 Untreated (late-successional and old-growth habitat)

No management activities are currently planned in Habitat Type 1 stands, which account for 14 percent of the OGEA (3,426 acres). Excluding up to 200 acres of pilot projects, no management activities are proposed in Habitat Type 2 stands which account for 37 percent of the OGEA (9,392 acres). Indirect effects associated with the continued exclusion of fire would include an increase in high tree densities, fire hazard, risk of insect infestation, and large tree mortality in these habitat types. Pilot projects in Habitat Type 2 stands would contribute to increased understanding of how to best manage these stands for late-successional habitat characteristics. If immediate and critical needs are identified in Habitat Type 1 and Type 2 stands through the adaptive management strategy described in Appendix C, management actions may be proposed and would be analyzed through a subsequent site-specific analysis.

The preservation of existing Habitat Types 1 and 2 in the OGEA is critical to the persistence of species dependent on late-successional forests for their life cycles. Management activities may be desirable in Habitat Types 1 and 2 at some point, but in the short-term, excluding treatments from these stands would ensure the continuation of habitat critical to the persistence of species dependent on late-successional forests such as the northern spotted owl.

Habitat Type 2 Treated (Pilot Projects)

Approximately 200 hundred acres of Habitat Type 2 would be treated in the wildland-urban interface through pilot projects that study the effects of thinning-from-below, gap creation, and prescribed fire on this habitat type. The direct effects of thinning small diameter trees and prescribed burning would be to maintain the existing canopy cover while reducing the lower layers of canopy. The indirect effects of thinning-from-below would be to increase the vigor of dominant Douglas-fir and pine species. Gap creation would allow for the establishment of these less shade-tolerant species. As less than two percent of this habitat type would be treated, no landscape level effects are expected.

Habitat Type 3 Treated

All 3,865 acres of Habitat Type 3 stands in the monument would be considered for thinning over the first decade. Of this total, 1,410 acres are within the connectivity area. It is expected that treating this many acres in the vicinity of the connectivity area would enhance the resource at the landscape level. Selection of preferred trees would accelerate growth and increase the amounts of historical species composition in these stands. Reduced densities would mimic, or at least approach, the stocking levels of young stands that developed into late-successional forests in the past. Accelerated growth and development would be obvious within five years.

Existing pine plantation stand densities would be thinned to a level that would decrease fire hazard and reduce risk to beetle attack as stands with a higher than natural pine component grow to maturity. Lower densities in the pine plantations would allow for the growth of other conifer species where desirable. Thinning mixed conifer stands would have the effect of promoting fire-dependent species and facilitating the removal of white fir from these stands. Some pile burning of thinned trees would occur at a low level, but underburning would not be feasible for 10 to 20 years given potential damage to young trees.

Within the WUI, pile burning would take place on approximately 70 acres of Habitat Type 3. Some pruning would enhance protection of homes and resources from wildland fire.

Habitat Type 5 Stands Treated

A maximum of 1,600 acres of Habitat Type 5 or about 19 percent of the 8,654 acres found in the monument would be thinned. Approximately 1,140 acres in the connectivity area and 460 acres in the WUI would be thinned. The net effect of this amount of localized thinning would reduce the risk of bark beetle and stand-replacing wildland fire events in these and adjacent stands. However, few landscape level effects would occur. Groups of dense trees would be thinned from below. The thinning across these stands would be highly variable given the current structure of forest stands in this habitat type. Growth within these groups would be accelerated. Pine species, incense cedar and Douglas-fir would increase, while white fir would decrease. Ladder fuels would be reduced, lowering the risk of stand-replacing wildland fire in the treated units. Thinned Habitat Type 5 stands would be put on a better trajectory to potentially become Habitat Type 2 in a few decades, thus increasing mature forest types in the monument. This anticipated increase in mature forest would benefit wildlife species, such as the northern spotted owl, through increased late-successional habitat and connectivity.

Habitat Type 5 Stands Untreated

Approximately 81 percent of the Habitat Type 5 stands would remain untreated. Over the short term, Habitat Type 5 forest stands would grow slowly within residual groups of larger trees left from previous logging. Over the long-term, stand conditions would be expected to stagnate due to increased stand density. Fire hazard would continue to increase in dense stands of small trees which would be more susceptible to stand-replacing wildland fires as fire-dependent species of pine and Douglas-fir become less common. Insect outbreaks would increase in severity. The effects of untreated dense stands would continue to be seen throughout the monument as increasing sporadic outbreaks of insects occur.

DEA Management

No direct effects from the limited pilot studies proposed in the DEA are expected in the OGEA. Indirect effects from prescribed fire treatments in shrublands could include a slight reduction in risks of high severity wildland fire to adjacent OGEA stands. Other OGEA stands adjacent to the DEA would continue to have an increased risk of high severity wildland fire spreading from these fire-prone plant communities.

Approximately 50 percent of the DEA lands within the WUI would be treated to reduce densities and associated fire hazard. Forest stands that were historically more open pine types would benefit from reduced risk of wildland fire and insects as DEA plant communities are treated adjacent to and among the these stands.

Management of Riparian Areas and Aquatic Resources

The proposed plan identifies the current condition of riparian areas and aquatic connectivity as a management concern for the OGEA. Monument forests show unfavorable shifts in historic vegetation composition in riparian areas. Management actions taken to improve and restore riparian structure and function and allow for the re-establishment of historic vegetation composition would directly benefit late-successional habitat and associated species in the OGEA.

Weed Management

Weeds are common on disturbed roadside sites and landings and in Habitat Types 3 and 5, where much disturbance has occurred. Noxious weeds would decrease in abundance with thinning and management that moves these stands toward maturity. Generally, weeds have not had much effect on undisturbed sites. Canadian thistle, which occupies disturbed sites such as roadsides and old landings, should diminish as well with forest management and noxious weed control.

Transportation and Access

Continuing human access would increase the likelihood of the introduction of noxious weeds. The current road density in the OGEA is 4.12mi./mi^2; following implementation of the plan the road density would be reduced to 3.68mi./mi^2. Reduction of roads followed by planting and rehabilitation efforts would benefit stand structure and increase habitat connectivity in these areas. Direct impacts to forests would occur in areas where illegal off-road use takes place. Off-road use by motorized vehicles can result in surface disturbance such as soil compaction and herbaceous vegetation disturbance.

Recreation and Visitor Services

Short- and long-term effects on forest stands would occur in the vicinity of the Hyatt Lake Campground. The area has heavy root rot incidence and, combined with human impacts within the campground, hazardous dead, injured, and dying trees must be removed as a safety precaution. Thinning of often large trees would reduce canopy and structure of the forest adjacent and within the campground. Planting of resistant trees (pine species) would change composition in both the short-and long-term.

Livestock Operations

The direct and indirect effects of livestock grazing in the OGEA are generally concentrated in specific sites where livestock congregate near water. In the short-term, riparian areas in mature stands would continue to show the effects of trampling and exposed soils. Negative impacts to soils and ground vegetation commonly occur in late-successional stands with a significant Pacific yew presence where tree seedlings and herbaceous vegetation can be trampled. The indirect effects of livestock in established pine plantations are sometimes beneficial where grazing reduces competition to trees from understory grasses. Following the completion of the Livestock Impact Study and the Rangeland Health Assessments and Evaluations, livestock grazing practices would be modified or eliminated in areas where livestock use is not considered compatible with the protection of monument resources. Recovery due to the modification or elimination of grazing practices would be rapid (2-3 years) in most areas.

Wildland Fire Suppression

Although fire is a natural ecological process, few forest stands would be able to withstand any significant level of wildland fire given the present accumulation of fuels and increased tree density in most stands. The continued suppression of wildland fire would protect forest stands that would otherwise suffer stand replacement during these events.

Collections/Special Forest Products

The unauthorized collection of objects, including plants and plant parts, is prohibited by the proclamation and this plan. To the extent possible, visitors would be educated on the prohibition on collection to prevent inadvertent damage to vegetation resources. The continued collection of fruits, nuts, berries, and mushrooms for personal use is allowed with certain restrictions. The limited collection of these resources for personal use is not expected to have an effect on the OGEA.

Utility Rights-of-Way and Road Rights-of-Way

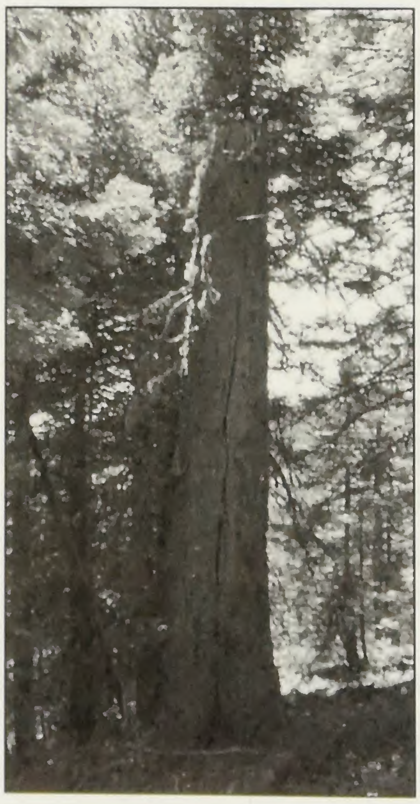
Requests for major utility rights-of-ways (ROWs) outside of existing corridors are expected to be minimal and would not affect the OGEA. Few new road ROWs are anticipated, as most are already in place in the OGEA as a result of past timber practices on all land ownerships. Direct and indirect effects from new road construction could include an increase habitat fragmentation by breaking up forest stands, creating areas predisposed to windfall, and introducing disturbed areas that are conduits for weed species.

Inventory, Monitoring, Research, and Adaptive Management

Most inventory, monitoring, and research activities are non-disturbing and would increase knowledge of forest structure, function, and disturbance responses. These activities would often be initiated in association with management activities in the OGEA. Results from inventory, monitoring, and research would be utilized in the adaptive management framework and would help improve management efforts to protect and enhance late-successional habitat. Forest inventories would usually not include the collection of forest products.

PROPOSED ACTIONS WITH NO REASONABLY FORESEEABLE EFFECTS

No reasonably foreseeable effects to the OGEA would be expected from proposed decisions listed under the following sections of this plan: *Wilderness Study Area Protection.*



Effects on the Diversity Emphasis Area

INTRODUCTION

The Diversity Emphasis Area (DEA) constitutes 52 percent of the total Cascade-Siskiyou National Monument and is home to plant communities, wildlife and individual vascular plants, mosses, fungi, and lichens identified as objects of biological interest by the presidential proclamation. The monument's proclamation emphasizes protection within the monument at different levels of biological organization (community, population, and individual species), as well as ecosystem processes on which these "biological objects" depend. The following analysis considers the influence of a range of factors within the management plan on DEA resources and important ecological processes.

SUMMARY OF EFFECTS

The main goal of DEA management is to maintain, protect, and restore habitat and ecological processes critical to the richness and abundance of the objects of biological interest for which the monument was proclaimed. The management proposed in this plan would move DEA plant communities toward this goal through the monument's weed management strategy and the improvement of riparian and wetland plant communities and habitats.

Noxious weed invasion may be the most important process affecting the future condition of plant communities in the DEA. Ongoing research indicates that noxious weeds are associated with all types of major disturbance, including timber harvest, road corridors, and high livestock utilization. Although it is likely that wind is the primary dispersal mechanism for the predominant weeds (yellow starthistle and Canada thistle) in the DEA, native ungulates, livestock, hikers, and vehicles also provide weed seed transport, particularly during the wet season. Linear weed distribution along streams indicates that water-flow may be another dispersal vector. Since many of these dispersal mechanisms would continue, controlling current weed populations, curtailing weed seed production, and reducing the amount of disturbance are critical for the short-term control of weeds. These are key components of the current management plan and would be beneficial to plant communities of the DEA.

Management for healthy plant communities able to withstand future invasions is the best long-term management strategy. Livestock grazing and fire (or fire exclusion) are two processes that affect plant communities and their ability to withstand weed invasion. The ongoing study of livestock impacts will provide information about current conditions and deviation from historic conditions; this information will be used to guide future management direction. The use of pilot studies to test restoration procedures prior to large-scale application would increase knowledge about these plant communities and create the foundation for future management in the DEA.

Management in the DEA would also be designed to complement OGEA management in the wildland-urban interface.

DIRECT AND INDIRECT EFFECTS OF PROPOSED MANAGEMENT

OGEA Management

Coordinated management of the DEA with fuel reduction and other activities of the OGEA will facilitate the use of prescribed fire in the DEA. Since fire is a key process across the CSNM, it is expected that OGEA management will benefit DEA resources in the future. As described above, disturbance activities in the OGEA may facilitate the introduction and spread of noxious weeds (e.g., Canada thistle). The monument's active noxious weed program is expected to control any new populations that result from management activities.

DEA Management

Management in the DEA would strive to balance current uses such as livestock grazing and recreation with ecological processes (e.g., fire, plant community succession, weed invasion) so as to maintain and protect the objects of biological interest. However, ecological processes of the DEA are complicated and poorly understood relative to those of the OGEA. Proposed management in the DEA focuses on increasing knowledge about these processes through research, pilot studies, and monitoring. For example, ongoing livestock impact studies and other monitoring projects have been implemented to examine the influence of different disturbances on natural resources and ecological processes in the DEA. The results of these studies will help provide managers with the information needed to implement management practices that improve current conditions in the DEA. The impacts on the DEA from weed abatement and riparian management are described in the weed and riparian sections below.

Potential management actions in the form of pilot studies include prescribed fire, weed management treatments, thinning, and shrub reduction. Due to the limited size of these pilot studies (10 - 100 acres), any impacts to the DEA would be minimal.

Specific management activities would include treating up to 50 percent of the DEA (320 acres) in the wildland-urban interface (WUI) primarily through manual thinning and prescribed fire. The combination of manual thinning and prescribed fire in these plant communities would reduce fire hazard by altering the structure of vegetation at the stand level. The DEA lands in the WUI only account for two percent of all DEA lands, and although these treatments would be concentrated geographically, impacts to the plant community would be minimized as treatments would be spread out spatially and temporally.

Except as described in the Noxious Weed Strategy (Appendix G), prescribed fire would be constrained to 10-acre study sites for understory burning and handpile burning and 100 acres for broadcast burning. Specific circumstances or specialized habitat may reduce study sites to less than 10 acres and include (1) the use of fire during the winter or spring; (2) burning in specialized habitat (riparian or unusual species compositions); and (3) areas of complete domination by native bunchgrasses would be used to maintain grasslands.

The effects of prescribed fire vary with the composition of the above-ground vegetation and the seedbank. For example, fire can be used effectively to reduce annual grass seed production if applied in the spring, thereby favoring native grasses. However, spring use of fire can also impact the abundance of native grasses and forbs. Fire used outside of the natural burning season may have deleterious effects on the native seedbank component cued to respond to summer or fall fire. Site-specific relative abundance of native and non-native plants, their individual response to fire, and other factors will play a role in locating pilot studies examining the use of prescribed fire.

For example, chaparral typifies fire-dependent plant communities regenerated by fire. Wildlife are also tied to fire as an ecological process through the maintenance of patchy habitat and improvement of browse quality. Fire-mediated grassland and oak savanna are dependent on shorter fire return interval for their persistence on the landscape. Prescribed fire used inappropriately could result in the conversion of natural plant communities to plant compositions or structures not present in historic times. Knowledge of plant community dynamics and historic condition would be used to determine where and when prescribed fire would be used to move plant communities towards a desired condition.

In summary, the positive and negative aspects of prescribed fire would be balanced to meet site-specific and landscape level objectives. The literature and use of pilot studies will help identify specific circumstances where prescribed fire can be harnessed to enhance the objects of biological interest in the DEA.

Given that the DEA pilot studies are designed to benefit natural resources and only a small percentage of the landscape would be actively managed, the direct and indirect effects on monument resources would be minimal. Furthermore, many of the pilot studies will examine the potential of different treatments for reducing noxious and other weed abundance and will therefore be located in areas already degraded by past management activities. Knowledge gained from the pilot studies will contribute to an understanding of DEA ecosystem dynamics and improve future management through the adaptive management process. Surveys and site-specific analysis prior to the implementation of pilot studies would prevent the loss of special status plants and wildlife.

Management of Riparian Areas and Aquatic Resources

Riparian areas are a critical component of the DEA. This plan proposes the following treatments in riparian areas: survey and/or inventory, planting and seeding of native species, thinning, reducing road density, fencing, and livestock management. The improvement of riparian areas through these activities would have a beneficial effect on the condition of plant communities and wildlife of the DEA. Riparian areas serve as movement corridors for weeds and native plants. The noxious weeds Canada thistle and dyers woad may show reduced abundance with the improvement of riparian condition and therefore consequent reduced ability to disperse through the landscape. Improved hydrologic function through floodplain restoration could indirectly benefit non-riparian plant communities as more natural flood events convey seeds and root bits of desired plants to non-riparian plant communities in the DEA.

Improved structure and composition of the riparian vegetation would most likely increase the abundance of wildlife dependent on riparian vegetation for forage and habitat. Future management of the riparian area may displace livestock use to the DEA uplands. However, this is unlikely to change current trends in vegetation condition of upland plant communities, as the proposed monitoring and adaptive management of the DEA would identify negative trends and change management accordingly.

Weed Management

The monitoring and control of weeds (especially noxious weeds with the ability to disrupt native plant communities) is critical for the long term-maintenance of native plants and other vegetation attributes of the CSNM, and the factor that will most strongly influence the future condition of DEA resources. The reduction of existing weed populations (especially noxious weeds) and the prevention of weed spread through selection of the most effective types of reduction treatments are management priorities in the DEA. Although the proposed plan doesn't set a limit on the number of acres that can be treated each year, it is expected that funding and other constraints would limit noxious weed treatments to approximately 2,000 acres a year. The monument's weed treatment strategy identifies priority areas for treatment to ensure that treatments are targeted in critical areas. While design protocols would mitigate collateral damage, weed control efforts may have short-term adverse impacts on some desired plants. Areas left untreated will continue to be a source of the introduction and spread of weeds in the monument.

Transportation and Access

Under the proposed plan, the road density in the DEA would be reduced from 2.37 mi/mi^2 to 1.55 mi/mi^2. In general, the projected reduction in road density and access will reduce visitor impacts and weed seed dissemination to the majority of the DEA landscape and are considered long-term beneficial effect on DEA resources. Closing and decommissioning roads may prevent future weed invasions, but may not help alleviate current weed infestations such as Canada thistle. Some of the worst weed infestations are along roads that will remain open and weed spread along these roads is likely.

Under the proposed plan, the retention of roads for official use would allow the transport of materials for restoration purposes (for example, native seed, and equipment for prescribed fire).

Recreation and Visitor Services

Recreational facilities and use that result in surface disturbance (such as trail and parking construction; motorized and mechanized access to dispersed camping areas; concentrated hiking and horseback riding off of existing trails; and illegal off-road use by OHVs), may have direct and indirect adverse impacts on the DEA. Potential direct impacts would include increased ground disturbance and trampling or removal of existing vegetation, which could facilitate the spread of noxious weeds.

The reduction of motorized and mechanized access to the Agate Flat, as well as group size restrictions in the south management zone, would reduce disturbance in these areas. Increased visitation to key areas such as Pilot Rock, Boccard Point (access areas for the Pacific Crest Trail, and areas with scenic vistas) could increase resource damage in these areas. Visitor education, improved signage for access points, and improvements to existing visitor access (erosion control, trail improvement, etc.) would help to mitigate potential resource damage. Outlying areas will likely show improvement or remain unchanged.

Levels of visitor use and recreational activities would be monitored throughout the CSNM. Recreational uses found to cause unacceptable resource damage in the DEA would be modified, limited, or prohibited. Prior to any trail or facility construction, project level NEPA analysis would be completed and site-specific impacts to DEA resources would be addressed.

Livestock Operations

Livestock utilization has the potential to directly impact vegetation in the DEA through the consumption of vegetation, physical impacts of trampling on soils and vegetation, and the spread of noxious weeds. Cattle can indirectly affect the DEA by altering ecological processes including fire, weed invasion and successional processes. Many of the current impacts associated with livestock grazing in the DEA occur due to the utilization of forage within riparian areas. The management infrastructure (roads, ponds, salting areas, and other localized disturbances) needed for livestock operations can serve as point sources of existing noxious weeds and high impact areas for the introduction of future weeds.

The effects of livestock vary by season and intensity of use. The literature indicates that spring use by livestock can suppress annual grasses, whereas heavy use of native bunchgrasses during the growing season and the consequent reduction of leaf area may result in a loss of bunchgrass health and vigor depending on local conditions. The preferred use of herbaceous species by livestock may alter the competitive balance between palatable herbaceous vegetation and relatively unpalatable vegetation (shrubs and weeds such as yellow starthistle and Canada thistle), thus facilitating shrub accumulation of formerly open plant communities. Long-term fixed seasonal use by livestock may restrict the ability of suites of plant species to mature, set seed, and replenish the seedbank. These and other patterns of change are most likely to manifest themselves in areas of moderate to high livestock use. Livestock impacts to the DEA are complex, dependent on timing and intensity of livestock use, and therefore require site-specific verification by the Livestock Impacts Study.

Given the past history of high livestock utilization in the DEA, it is unlikely that short-term changes in livestock management will affect the objects of biological interest across the monument landscape. Continued monitoring and proactive management within the framework of adaptive management are likely to maintain current conditions. Areas of high utilization likely will show impacts such as weed invasion, loss of soil cover, and retarded rates of recovery from past disturbances in comparison to livestock exclusion. The presence of livestock could inhibit future restoration and prescribed fire activities in the DEA.

Existing grazing leases authorize a total of 2,780 active AUMs during the grazing season. In 2003, the livestock lessees only used a percentage (35 percent) of the AUMs authorized under their grazing leases. The ten-year actual use average shows that livestock lessees used only approximately 58 percent of the authorized AUMs. If all the permitted AUMs were put to use, the negative impacts to the DEA from cattle could increase. In general, however, improvements in the timing and movement patterns of livestock could help reduced the impacts of increases in AUMs.

Short-term efforts to reduce impacts in riparian areas under the existing terms and conditions of livestock leases may reduce livestock impacts to riparian areas and allow for increased recovery of these plant communities. However, reducing livestock utilization in riparian areas may increase the utilization of grasslands, shrublands, and woodlands of the DEA.

For purposes of long-term management, this plan describes the process for completing the Livestock Impact Study and the Rangeland Health Assessments and Evaluations. The information derived from this process will be used to determine if grazing is “incompatible with protecting the objects of biological interest.” If current livestock operations are found incompatible with protecting the resource values found in the DEA, changes to existing grazing management practices in these areas would prevent degradation and allow for future restoration of problem areas.

Wildland Fire Suppression

The current strategy of wildland fire management will continue to affect plant communities of the DEA in a direct and indirect manner. Where fires occur, the creation of firelines, dozer lines and other disturbances associated with fire suppression will likely result in localized displacement of native species with weeds. Continued fire suppression will promote indirect and ongoing plant community change associated with "fire exclusion"

Considering the role of fire as an ecological process, wildland fire management will likely lengthen the fire return interval for all plant communities in the DEA. While this may not alter the ecological functioning of many plant communities (chaparral, Brewers oak woodlands, rocky meadows, etc.) other plant communities may be impacted. Fire-mediated grasslands and woodlands are most likely to change under current wildland fire management. A lengthened fire return interval coupled with the accumulation of fuels may result in stand-replacement fire and further loss of old-growth conifer and oak structure still found in some areas of the DEA. A lengthened fire-return interval also implies that a lower percentage of the landscape will have a younger cohort of shrubs available as browse for deer.

Collections/Special Forest Products

The unauthorized collection of objects, including plants and plant parts, is prohibited by the proclamation and this plan. To the extent possible, visitors would be educated on the prohibition on collection to prevent inadvertent damage to vegetation resources. The continued collection of fruits, nuts, berries, and mushrooms for personal use is allowed with certain restrictions. The limited collection of these resources for personal use is not expected to have an effect on the DEA.

Utility Rights-of-Way and Road Rights-of-Way

Requests for major utility rights-of-ways (ROWs) outside of exiting corridors are expected to be minimal and would not affect the DEA. In cases where existing rights-of-way are found to negatively impact the DEA, BLM will work with authorized holders to reduce those impacts where feasible. Few new road ROWs are anticipated. However, where road construction occurs, weeds may increase in abundance and further plant and wildlife habitat degradation would occur.

Inventory, Monitoring, Research, and Adaptive Management

Where feasible, inventory, monitoring, and research are conducted using non-destructive techniques and will therefore not influence the abundance of objects of biological interest. Furthermore, it is not envisaged that management will affect a significant portion of the CSNM since most forms of management in the DEA are restricted in extent (10 or 100 acres, noxious weed management and riparian management excepted), depending on treatment type. The form of adaptive management adopted in the monument would allow for a continued improvement of treatment methods and the hypothesized benefits to the natural resources of the CSNM.

Research conducted by other agencies, non-governmental organizations, or individuals would be considered on a site-specific basis. To mitigate the effects of research and collection activities, no collections of organisms or other natural resources threatening the continued persistence or recovery to historic abundance of "objects of biological interest" and important ecological processes would be allowed in the CSNM.

Wilderness Study Area (WSA) Protection

Protection of the wilderness study area has resulted in a low impact area in terms of past habitat improvement projects (scarifications) by the BLM. Continued protection with the ability to manage noxious weeds provides a control for similar plant communities subjected to future management activities, including prescribed fire. While lack of fire may promote perceived negative plant community change associated with fire exclusion, the lack of management inside the WSA also provides a component of the adaptive management strategy for the CSNM and may improve our understanding of ecological processes across the landscape.

Effects on Riparian Areas and Aquatic Species

INTRODUCTION

Riparian areas in the Cascade-Siskiyou National Monument are a critical habitat element for many different aquatic and terrestrial organisms that use these areas for forage, rearing, nesting, and migration. They provide ribbons of connectivity for terrestrial and aquatic wildlife and create special zones where vascular plant diversity is high (Naiman et al. 1993). Within the monument, designated riparian reserves account for 20 percent of the landscape.

SUMMARY OF EFFECTS

The primary management goal for riparian areas is to protect and restore riparian features critical to ecosystem health in order to support the monument's diverse populations of plants and animals. The following actions all contribute to an increase in protection for and understanding of riparian resources and aquatic connectivity in the monument: attainment of Aquatic Conservation Strategy (ACS) objectives; compliance with the Clean Water Act; limits on surface disturbing activities; mechanisms to control visitor use; elimination of vehicular travel via closure of designated routes; monitoring of proper functioning condition (PFC) for riparian areas; the identification of priority areas for restoration; road decommissioning; proactive livestock management in riparian areas; thinning treatments; restoration and revegetation provisions; protection for special status species; and an active noxious weed control program. Additionally, research and use of the adaptive management framework (Appendix C) would facilitate and increase knowledge about these areas in the monument, providing mechanisms for changing management to increase protection of these unique and vital resources.

Effects on riparian resources result directly and indirectly from high road densities and from congregation and forage utilization by livestock. These activities impact stream banks and riparian vegetation, often causing erosion, reduced vigor of vegetation, reduced shade and cover, and reduced sediment capture capabilities. Road systems generate fine sediments that would continue to settle in fish habitat, reducing the permeability of spawning gravels, filling in pools, eliminating habitat for aquatic insects and restricting migration. Cattle in riparian areas impact stream banks and riparian vegetation which can lead to erosion, fine sediment, reduced vigor of vegetation, reduced shade and cover, and reduced sediment capture capabilities. Weed invasion in riparian areas is also associated with road corridors and cattle distribution. Aquatic organisms are interrelated and interdependent; impacts on any one are likely to have an impact on others.

Other management activities within the monument that would affect riparian areas and aquatic organisms include illegal off-highway vehicle traffic, water withdrawals, diversions and dams, prescribed fire, and fire suppression.

Specifically, riparian areas would benefit from a 21 percent reduction of roads in riparian reserves through decommissioning; an additional 11 percent of roads in riparian reserves would be improved or closed. Grazing at current levels would continue to result in areas where livestock utilization of riparian vegetation is beyond what is optimal for fish and other aquatic organisms. Thinning along intermittent streams and in dry draws would reduce the fuel hazard in these areas, thereby lowering the risk of high intensity fire in these types of riparian areas.

DIRECT AND INDIRECT EFFECTS OF PROPOSED ACTION

OGEA Management

Proposed management in the OGEA would benefit riparian areas and aquatic species by limiting activities in riparian reserves to restorative actions that might include thinning small diameter conifers and adding large wood to riparian areas. Thinning within the riparian reserves would only be initiated to improve riparian and stream habitat. Restorative thinning in a stand with uniformly-aged young trees would encourage increased tree size and species diversity, as well as understory canopy layering (for riparian habitat improvement and improved nutrient input to the stream). Thinning would only occur in areas where past management has created unnaturally dense stands. Trees that might provide large wood to stream systems would not be removed. The long-term effects of thinning would be to facilitate late-successional characteristics and improve aquatic habitats by increasing riparian shade and eventually contributing large diameter wood to the stream systems.

Peak flows may increase where thinning occurs in the transient snow zone (TSZ) (see **Effects on Water Resources** section). Yarding activities could result in compaction and soil erosion. Peak flow increases and erosion can negatively affect aquatic organisms. However, subsequent environmental analysis would address potential negative effects prior to implementation of treatments in the OGEA.

Prescribed fire would be used in riparian reserves within the OGEA only to the extent that fire would be allowed to back into riparian reserves, creeping along the ground, creating a mosaic that would mimic natural conditions. Some organisms may be displaced or otherwise harmed during the burn and after; however, the reintroduction of fire is expected to be minimal and will provide long-term benefits to riparian areas and associated inhabitants.

DEA Management

Pilot studies proposed for the DEA are designed to enhance understanding of the effects of management activities on plant communities and ecological processes. Non-surface disturbing pilot studies in riparian and aquatic habitats that would increase the knowledge of riparian resources in the monument or that would help protect and restore these areas would be encouraged. Surface-disturbing pilot studies would be analyzed on a case-by-case basis and could be permitted in cases where the study would benefit monument resources and provide a greater understanding of riparian ecosystem function.

Prescribed fire would be used in riparian reserves only to the extent that fire would be allowed to back into riparian areas, creeping along the ground, creating a mosaic that would mimic natural conditions. The short- and long-term effects of prescribed fire would be beneficial to riparian areas and associated inhabitants. In intermittent streams where perennial vegetation is minimal or non-existent, fire would also be allowed to back into the draws. Some organisms may be displaced or otherwise harmed during the burn and after, however reintroduction of fire is expected to be minimal and will provide long-term benefits. It is not anticipated that these actions would have negative effects on riparian habitats or aquatic organisms and long-term habitat improvements are projected.

Management of Riparian Areas and Aquatic Resources

By conservative estimates, approximately 20 percent of the monument's total acreage is in riparian reserves. Management goals and tools proposed in this plan would begin to restore riparian conditions. The ACS is designed to restore and protect hydrologic function, aquatic connectivity, wetland and riparian plant communities and structure, as well as habitat for terrestrial and aquatic organisms. Restoration and maintenance of riparian areas to proper functioning condition (PFC) would enhance these areas throughout the monument. Surveys to assess PFC have been completed on approximately 30 percent of the monument and additional inventories are proposed as part of the monument management plan. Inventory is proceeding in priority areas and will be accomplished throughout the monument as funding is available. Non-functioning and at-risk riparian areas have the potential for continued degradation until actions are taken to reverse or stop activities causing these impacts.

The development of a Water Quality Restoration Plan as described in **Riparian Areas and Aquatic Resources** (Chapter 2), would include recovery goals for BLM-managed land to enhance riparian conditions and improve water quality.

Instream flow is critical to aquatic organisms and their habitat and current flow conditions in the monument are less than optimal. Improvements to this situation would be pursued when opportunities arise but at this time it is expected that current conditions would not change as a result of this plan.

Weed Management

Noxious weed abatement has been identified as a key objective in riparian areas and will take place as funding permits. Noxious weeds indirectly affect aquatic habitat and aquatic organisms by replacing native species and de-watering critical riparian habitat. Removal of these species, though temporarily removing cover, would facilitate the return of native species in the long-term. The recovery of native vegetation structure and function would improve habitat for populations of species dependent on native riparian vegetation. There is the potential for continued degradation of habitat in areas left untreated.

Weed management in riparian areas would be limited to manually pulling the weeds where possible; where more intense actions are required, wicking or spot spraying could be used. These treatments would be used sparingly and only where necessary to reduce an invasion of noxious weeds that compete with native riparian plants. Spot spraying would not be used within ten feet of the water surface and only glyphosate would be used within riparian areas. This buffer will eliminate the potential for any drift entering waters (Hatterman-Valenti et al. 1995).

Transportation and Access

Road densities in riparian reserves currently average 3.66 mi/mi^2. The plan would allow a 21 percent reduction of roads in riparian reserves, while 11 percent of roads in riparian reserves would be improved or closed. The resulting overall reduction in road densities to 2.87 mi/mi^2 in riparian reserves would help aquatic resources by limiting sediment inputs to streams, and culvert removals would restore hydrologic function to some stream segments. Remaining roads would still contribute fine sediment to streams although overall sedimentation from roads would be reduced.

Where road decommissioning takes place in riparian areas, fine sediment inputs would be reduced and stream function would improve through the restoration of formerly constricted stream channels. Removing culverts would help re-establish aquatic connectivity where it was previously restricted, improving passage for all aquatic organisms. Short-term increases in sediment as a result of road improvement and decommissioning would be off-set by the long-term beneficial effects of decreasing road densities and improving road systems. Road construction in riparian reserves would be limited and only occur where alternate routes are not available.

Recreation and Visitor Services

Due to the presence of water and vegetation for shade, visitors prefer to use riparian areas over surrounding areas, concentrating use and subsequent impacts. Recreational use that takes place close to waterways and riparian areas may lead to increased erosion and sedimentation, affecting water quality and aquatic habitats and aquatic populations. This plan would prohibit vehicle use on closed or unauthorized routes in riparian reserves, which could reduce sediment input to nearby streams. Over time, riparian conditions would improve as trees grow in these old road beds, improving riparian cover and loosening compacted soil as roots become established.

Dispersed camping would not be permitted in riparian areas, which would limit compaction and trampling of vegetation. Overnight animal stock users would not be allowed to hold stock within 200 feet of any water's edge. This would provide additional protection to fragile riparian soils and vegetation necessary to maintain functioning riparian areas.

Livestock Operations

Short-term improvement in riparian areas may occur as livestock operations are managed under existing laws and regulations in an effort meet the Oregon Standards and Guidelines for Rangeland Health (Appendix I). The tools currently available for managing livestock include moving cattle out of the area, changing season and timing of use, reducing AUMs, fencing, rest, or other options under the terms and conditions of existing grazing leases. Fencing seeps and springs would improve water quality conditions in areas where trampling, sedimentation, and lack of shade negatively affect water quality and aquatic organisms, specifically endemic mollusk species. Monitoring riparian areas regularly and frequently would be the best option for determining condition and moving cattle before an area becomes over-utilized.

Unless their distribution is rigidly controlled, cattle prefer to spend a disproportionate amount of time in riparian areas, preferring cooler temperatures and access to water (Skovlin 1984). Thus, livestock have the potential to impact riparian resources directly by consumption and trampling of vegetation, and indirectly by accelerating erosion leading to further damage of riparian resources. The direct and indirect effects of livestock grazing in riparian areas include the physical effects on stream banks and riparian vegetation, and reduced cover for aquatic organisms. Moreover, intensive grazing of riparian vegetation can reduce the vigor of aquatic vegetation and woody species, change plant community composition, decrease sediment capture capabilities, and alter hydrologic function. Indirectly, livestock grazing has the potential to affect aquatic organisms and their habitats by filling pools with fine sediment, silting in spawning gravels, limiting habitat for macroinvertebrates, reducing undercut banks used for cover, and eliminating overhanging vegetation that provides cover and captures fine sediment during high flows. Associated bank erosion and stream bank trampling can lead to increased width to depth ratios, which can cause temperature increases. Additionally, organisms that rely on well-oxygenated, clean water can be replaced with species more adapted to finer substrate and increased water temperatures.

Existing grazing leases authorize a total of 2,714 active AUMs during the grazing season. In 2003, the livestock lessees only used a percentage (35 percent) of the AUMs authorized under their grazing leases. The ten-year actual use average shows that livestock lessees used only approximately 58 percent of the authorized AUMs. If all the permitted AUMs were put to use, the negative effects to riparian areas and aquatic organisms could increase significantly.

This plan describes the process for completing the Livestock Impact Study and the Rangeland Health Assessment and Evaluations. The resulting information will be used to determine if grazing is "incompatible with protecting the objects of biological interest." If current livestock operations are found incompatible with protecting the resource values found in riparian areas, changes to existing grazing management practices in these areas would prevent continued degradation and allow for future restoration of problem areas.

Wildland Fire Suppression

Historically, wildland fire has been one of the most significant contributors of large wood to stream systems; however, years of fire suppression have drastically curtailed this large wood-to-stream mechanism in the monument. Fire suppression would continue, but this plan prohibits use of dozers in riparian areas unless set perpendicular to streams and water-barred as part of the post-fire rehabilitation. Fire retardant would not be used near water. These restrictions would limit some of the most degrading suppression activities that can occur in riparian areas.

Leaving large wood in riparian areas would set the stage for improved large wood recruitment into stream segments. Large wood in streams would provide long-term improvement in aquatic organism habitat, improve channel function, and increase channel complexity. The short-term effects of fire suppression activities would include clearing vegetation and potential for immediate sediment input into streams where dozer lines are created. Proper restoration of dozer and hand lines would reduce the long-term inputs of sediment and vegetation would eventually re-grow over the suppression lines.

Utility Rights-of-Way and Road Rights-of-Way

Requests for major utility rights-of-ways (ROWs) outside of exiting corridors are expected to be minimal and would not affect riparian areas. Few new road ROWs are anticipated. Any new rights-of-way construction must avoid adverse effects that retard or prevent attainment of the Aquatic Conservation Strategy objectives. Where legally possible these projects would be designed outside riparian reserves and efforts would be made to ensure that all other options are considered before activities in riparian reserves are approved. If no other options were available, mitigating measures would be incorporated to maintain riparian ecosystem integrity. However, there would likely be short-term sediment pulses from new road construction in riparian areas and long-term consequences from such activities.

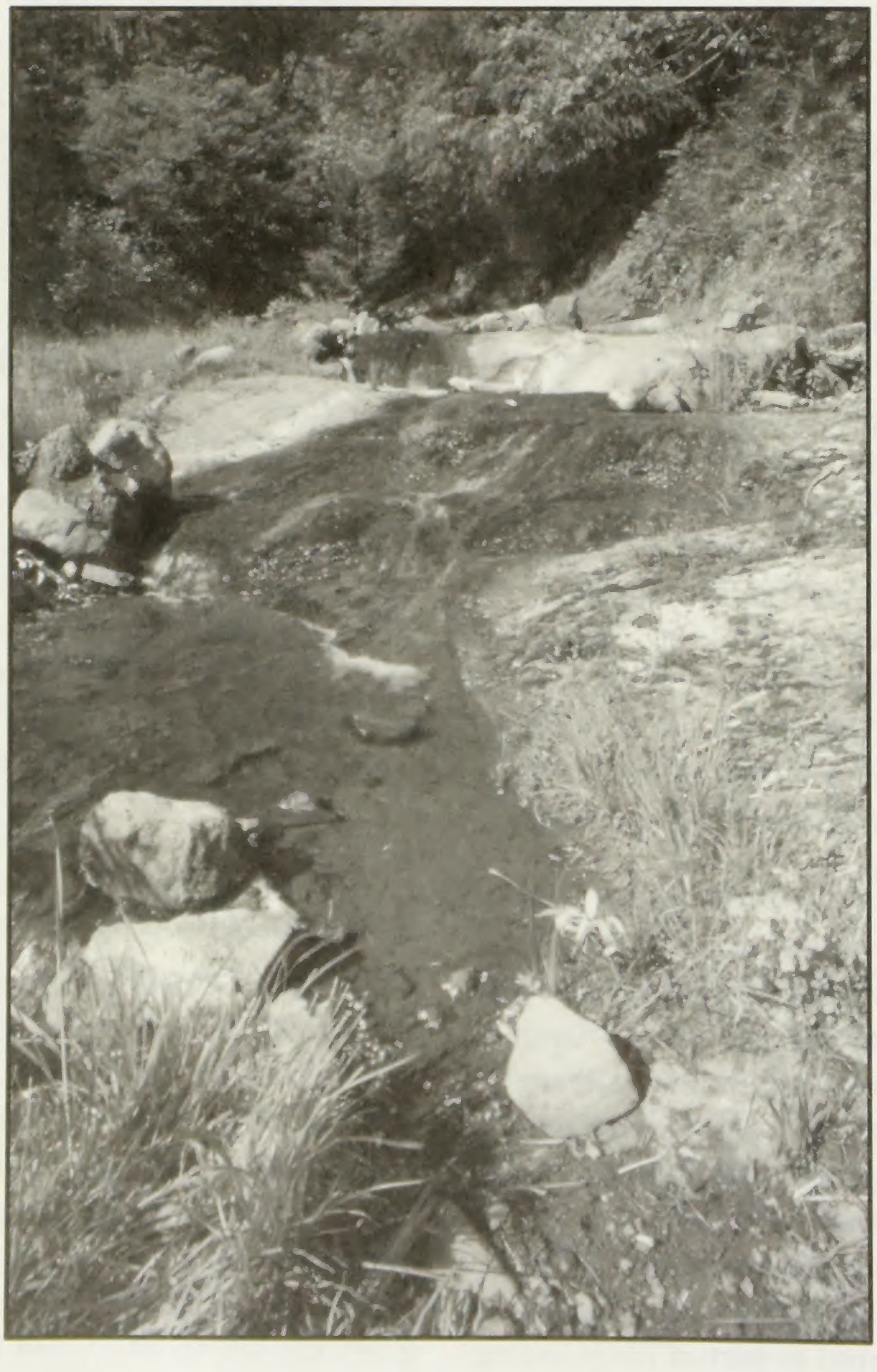
Inventory, Monitoring, Research, and Adaptive Management

Non-surface disturbing research activities which focus on increasing the knowledge of riparian resources in the monument, or which would help restore and protect these resources, would be encouraged. Monitoring initiated as part of the adaptive management framework (Appendix C) would provide information regarding the condition of riparian resources in the monument and thus a mechanism for alteration in management if degradation to riparian resources was determined to be occurring.

Surface-disturbing research activities could degrade riparian and aquatic habitats and as such would only be considered on a project-specific basis and only if the benefit was determined to provide greater understanding to monument ecosystem functions.

PROPOSED ACTIONS WITH NO REASONABLY FORESEEABLE EFFECTS

No reasonably foreseeable effects to the riparian areas and aquatic species would be expected from proposed decisions listed under the following sections of this plan: *Collections/Special Forest Products, Wilderness Study Area Protection.*



Effects on Water Resources

INTRODUCTION

Water resources within and around the Cascade-Siskiyou National Monument (CSNM) are vital to sustaining the monument's plant and animal species. Riparian vegetation is dependent on the soil moisture adjacent to streams, lakes, seeps, springs, and wetlands. Seasonal wetlands provide habitat for rare plants. Jenny Creek is home to three endemic fish species and springs in the monument support a variety of fresh water snails. Isolated springs and seeps of Soda Mountain and Keene Ridge, and the sag ponds such as those found at Parsnip Lakes are water features that are biologically important on the landscape.

Water flowing through the monument is also important for the surrounding communities and the ranching and forest industries. It is used for domestic water supply, irrigation, livestock watering, hydroelectric production, water-based recreational activities, and forest management operations.

Water quality that meets the standards set by State of Oregon is essential for all water uses in the monument. Nine streams (Jenny, Johnson, Keene, South Fork Keene, Mill, Carter, Emigrant, Hobart, and Tyler creeks) in the monument were identified by the Oregon Department of Environmental Quality (DEQ) in 2002 as not meeting water quality standards for summer temperature (http://www.deq.state.or.us/wq/303dlist/303dpage.htm). In addition, the DEQ moved three streams (Beaver, Corral, and Lincoln creeks) in the monument from the water quality limited list to the potential concern list because temperature data submitted for listing was collected during a drought year.

SUMMARY OF EFFECTS

Negative, short-term impacts to water resources in the monument could result from proposed activities that decrease vegetative cover, increase soil compaction, or increase soil erosion. These types of activities could include facility construction; road construction; forest thinning; prescribed fire; wildfire suppression; livestock grazing; unauthorized OHV use; and road decommissioning. Potential effects on water resources could include increased turbidity, sedimentation, and temperature, in addition to changes in hydrologic function and streamflow regimes.

Additional short-term water quality degradation in the monument could result from increased nutrient leaching from prescribed burning and increased levels of bacteria and pathogens from recreational use and livestock grazing. There would be a low potential for the introduction into a waterbody of herbicide used for noxious weeds or retardant or foam used for wildfire suppression.

Implementation of best management practices (BMPs) and the Aquatic Conservation Strategy (ACS) would be essential to minimize adverse effects on water resources, especially the water quality limited (303(d)) streams in the monument. Completion of the livestock grazing assessments and implementation of allotment-specific management to protect water resources would be critical to achieving compliance with water quality standards and moving riparian areas to proper functioning condition. Effectiveness monitoring would be necessary to ensure that water resources are being protected.

As the presidential proclamation is implemented, protection of the ecological integrity of the monument would move the uplands and riparian areas toward proper functioning condition. This would have a positive long-term effect on water resources in the monument. Road restoration work including drainage improvements and decommissioning would provide an overall improvement to the hydrologic function and water quality in the drainages affected.

DIRECT AND INDIRECT EFFECTS OF PROPOSED MANAGEMENT

OGEA Management

The primary OGEA management tools would be forest thinning and prescribed fire. Potential effects of these proposed tools on water resources include increased magnitude and frequency of peak flows from extensive vegetation removal and increased erosion and sedimentation from soil disturbance due to yarding and burning. Vegetation removal reduces canopy closure, which can result in increased snow accumulation in the transient snow zone. This can lead to higher peak flows during rain-on-snow events. All proposed thinning would occur in either the transient snow zone or the snow dominated zone.

No increase in water temperature is anticipated from thinning or prescribed burning in the OGEA since shading would be maintained on perennial streams. Treatments in riparian reserves along perennial streams would be done in accordance with the Sufficiency Analysis for Stream Temperature (USDA, USDI 2004d). Thinning in riparian reserves along perennial streams would only be proposed where vegetation density is high and will benefit from thinning. Vegetation treatment would not result in more than a 50 percent reduction in canopy closure and would not occur in the primary shade zone (USDA, USDI 2004d).

Current and post-treatment canopy closures vary between Habitat Type (Table 3-1).

Proposed OGEA thinning in Habitat Type 2 would not change the canopy closure and therefore would not be likely to affect streamflows. The low number of Habitat Type 2 acres (200) proposed for treatment would not likely have any adverse effects on water quality, providing BMPs were followed if any yarding occurred and during prescribed burning.

OGEA treatments in Habitat Type 3 would have the greatest potential for affecting water resources due to the large number of acres proposed for thinning (3,840 acres) and burning (1,900 acres), and the amount of canopy closure proposed for removal. While the majority of the proposed Habitat Type 3 thinning would be dispersed across the OGEA, treatments would be concentrated in the following three drainage areas: (1) Emigrant Creek above Porcupine Creek in the Upper Emigrant Creek subwatershed (24 percent of the drainage area); (2) South Fork Keene Creek (27 percent of the drainage area); and (3) Lincoln Creek (19 percent of the drainage area) in the Keene Creek subwatershed (Map 4). Historic crown closure in these drainage areas ranges from greater than 30 percent to greater than 50 percent (Appendix H, Table H-1). Estimated post-treatment canopy closures would range from 5 to 40 percent, and therefore both treated and untreated areas would have canopy closures that are less than the historic levels. Of the three areas likely to have concentrated treatments, only the Emigrant Creek drainage area above Porcupine Creek falls predominately in the transient snow zone. There could be a potential risk of peak flow enhancement in the Emigrant Creek above Porcupine Creek drainage area due to canopy closures that are less than 30 percent (Watershed Professionals Network 1999). The potential risk of peak flow enhancement would be short term, as increased growth rates would quickly provide canopy closures over 30 percent. Yarding activities in Habitat Type 3 would be minimal and not likely to have any effect on erosion rates or sedimentation. Prescribed burning on 1,900 acres in OGEA Habitat Type 3 would consist of selective handpile burning. Handpiles would be kept away from streams, seeps, springs, wetlands, and other waterbodies to minimize the movement of soil and ash to water sources.

Proposed treatments in Habitat Type 5 (1,600 acres) would aim for a 60 percent canopy closure, with a minimum of 50 percent, except where existing canopy closure is less than 50 percent. The majority of Habitat Type 5 treatments would occur in the Keene Creek Subwatershed (more specifically in the seven drainage areas below Keene Creek Dam); the rest would occur in the Middle Jenny Creek Subwatershed (more specifically the Corral Creek drainage area and the drainage area along Jenny Creek below Beaver Creek and above Keene Creek). Ecoregions associated with the proposed Habitat Type 5 thinning are the Southern Cascades and Klamath

Table 3-1. OGEA Estimated Current and Post-Treatment Canopy Closures by Habitat Type

Habitat Type	Estimated Current Canopy Closure (%)	Estimated Post-Treatment Canopy Closure (%)	Estimated Reduction in Canopy Closure (%)
2	80	80	0
3	5-60	5-40	0-20
5	30-70	30-60	0-20

River Ridges which have historic crown closures of 40-45 percent and greater than 30 percent, respectively (Appendix H). Proposed Habitat Type 5 thinning would not reduce existing canopy closures below the historic levels. There would be a low risk for peak-flow enhancements during rain-on-snow events as a result of thinning in Habitat Type 5 because the pre- and post-treatment canopy closures would be greater than 30 percent (Watershed Professionals Network 1999). Yarding and prescribed burning activities could be a concern for water quality, especially the three water quality limited streams and two streams listed on DEQ's 303(d) integrated report as potential concerns in the proposed treatment area. Ground-based yarding, especially with tractors, would result in soil compaction and possibly soil erosion. Prescribed burning in Habitat Type 5 would consist of handpile burning during the first entry and then underburning during a second entry. Handpiles would be kept away from streams, seeps, springs, wetlands, and other waterbodies to minimize the movement of soil and ash to water sources. Prescribed underburning would be conducted during weather conditions when moisture levels allow for low intensity fire. Sediment increases from low intensity, prescribed underburns would be very slight given that there would be minimal burning within riparian reserves.

Over the long term, canopy closures in the monument would be maintained at or above historic levels thus reducing the open canopy influence on peak flow enhancement.

Project level NEPA analysis would be required to address effects on water resources prior to implementation of treatments in the OGEA.

DEA Management

Management objectives for the DEA include protecting and enhancing hydrologic function and water quality. Proposed management in the DEA would address weed abatement, restoration and protection of riparian areas and wetland plant communities, and pilot studies in fire-dependent plant communities. Treatment of noxious weeds is discussed in the Weed Management section below. Restoration and protection of riparian areas and wetlands would be beneficial to water resources, improving hydrologic function and water quality. Effects of prescribed fire on water resources would be a concern with the broadcast burning pilot studies on grasslands and shrublands that may extend up to 100 acres within a drainage area. These would be fairly high intensity burns with the intent to eliminate the duff layer in grasslands and to reinitiate shrub stands. These burns would likely expose mineral soil that would be subject to erosion, especially for burns that result in hydrophobic soils. This is especially a concern in the fall, since the burned area would not revegetate until the following spring. Intense fall and winter rains immediately following the burn could move soil and ash to stream channels. There could also be a localized increase in runoff until the burned area revegetates. Direct impacts of fire in riparian areas should be minimized with site-specific prescriptions for riparian areas and placement of pilot studies to avoid sensitive plant communities associated with perennial streams, seeps, springs, and wetlands. Riparian areas for waterbodies on the DEQ's 303(d) list would be protected from any impact on stream shading.

Site-specific NEPA analysis would be required to address effects on water resources prior to implementation of pilot studies in the DEA.

Management of Riparian Areas and Aquatic Resources

All management actions/treatments throughout the monument would be consistent with the Aquatic Conservation Strategy (ACS). Protection and restoration of riparian areas and water resources are key elements of the ACS. One of the primary objectives for riparian management in the CSNM is to protect and enhance hydrologic function and water quality. This management strategy would indirectly improve water resources throughout the monument.

Weed Management

Noxious weeds in riparian areas replace native species resulting in reduced shade and base flows and increased water temperatures. A major objective of the proposed plan is controlling noxious weeds through treatments such as manual weeding, bio-control, spot spraying with herbicides and hot foam, prescribed fire, and prescribed livestock grazing. Long-term effects of noxious weed control would be beneficial to water resources as ecological processes are restored.

Approximately 425 acres (four percent) of the riparian reserves in the monument were treated for noxious weed control in 2003. Spot spraying with herbicides was the dominant treatment method with a small percentage (5-10 percent) treated with hand pulling. Based on funding estimates, this would likely represent a yearly average for the amount of riparian reserves to be treated for noxious weeds using these two methods.

No effects on water resources from the hot foam (alkyl polyglycoside) treatments are expected for several reasons: no foam would be sprayed directly in any waterbody; the foam is only used on annual species which are not anticipated to be within 20 feet of water sources; and low concentrations (.0004 mg/l) are proposed for application. The LC50 for mortality of Brachydanio rerio (the zebra danio, Cyprinidae) is 101 mg/l and the EC50 for swimming ability of Daphnia magna is 20 mg/l (Steber et al. 1995).

Potential impacts to water resources from prescribed livestock grazing are addressed in this section under **Livestock Grazing**.

Short-term direct and indirect effects on water resources such as the introduction of herbicides into waterbodies and increased sediment could result from spot spraying and prescribed fire. The degree of impact would depend on the size of the treated area, closeness to water, existing water quality, and type of treatment.

Proposed mitigation measures for herbicide treatments in riparian areas (i.e., a ten-foot "no spray" buffer, ground application within 10 feet of flowing streams and wet areas, limiting herbicides to glyphosate or a similar product, and only spraying when wind velocity is less than 5 mph) should minimize the introduction of a herbicide into a waterbody. Little potential exists for drift from spot spraying and glyphosate has a low tendency to run off or leach into ground water because it strongly adsorbs to soil particles (USDI 1989). The mitigation measure that prevents herbicide treatment if any rain is predicted within 24 hours should keep glyphosate from being washed off by precipitation into seasonal streams without riparian areas or entering ground water.

Potential impacts on water resources from prescribed burning to control noxious weeds include increased sedimentation, increased nutrients leached from ashes, and increased runoff during storms (USDI 1989). The degree of impact would vary depending on the amount of exposed soil, severity of the burn, and distance to the nearest waterbody (USDI 1985). Site-specific prescriptions would be developed for prescribed burning in riparian reserves to minimize adverse impacts to water resources.

Transportation and Access

Roads directly and indirectly affect natural sediment and hydrologic regimes by altering streamflow, sediment loading, sediment transport and deposition, channel morphology, channel stability, substrate composition, stream temperatures, water quality, and riparian conditions within a watershed. Transportation management objectives for the monument include reducing the amount of existing roads with decommissioning being preferred over road closures. Proposed transportation management actions that could potentially affect water resources include road construction, drainage improvement, maintenance, and decommissioning.

Road construction in the monument would take place under limited circumstances and would be designed to minimize resource damage. BMPs for road construction would be implemented to meet water quality objectives. Road construction in riparian reserves or across stream channels would only occur if there is no alternate route. Any proposed road construction would be analyzed for site-specific impacts to water quality during the NEPA process.

Proposed drainage improvements within the CSNM would take place on approximately 25 road miles, with seven miles being within the riparian reserves. Road stabilization could also occur as needed to reduce surface erosion. Replacing or installing drainage structures in perennial streams could potentially result in direct soil input into the streams. Any turbidity/sediment increase would be localized and of short-term, limited duration. Sediment entering an intermittent stream during in-channel work would indirectly affect water quality after the first storm events when water is again present in the channel. Indirect effects on all streams where drainage improvement takes place could result from soil moving offsite and reaching a stream channel after the work is completed. Adverse sediment impacts would be minimized through implementation of BMPs. Drainage improvements and road stabilization that meet current BLM standards would provide a net long-term benefit to the water quality of the affected stream systems, as they would reduce erosion and the likelihood of high water damage.

Proper maintenance of road drainage systems and stream crossing culverts would protect water quality and reduce erosion and sedimentation.

Proposed decommissioning of 53 road miles would provide an overall improvement to the hydrologic function and water quality in the drainages affected. The benefits would include reduced road-caused sedimentation and reduced risk of a culvert-related road failure. However, there would likely be some adverse short-term direct and indirect effects on turbidity and sedimentation as a result of road decommissioning. The highest risk would occur from the approximately 13 road miles to be decommissioned within riparian reserves and at the proposed road stream crossing removals on approximately 5 perennial streams. Proposed road decommissioning would involve the removal of approximately 23 culverts from intermittent and perennial stream crossings. The channel area associated with the removed culverts would be shaped to match the natural configuration as much as possible and become self-maintaining.

Potential adverse direct effects would be short-term increases in turbidity and sedimentation during culvert removals from perennial streams. For all streams, streambank erosion resulting from culvert removal would continue to have an indirect effect during successive bankfull events until vegetation becomes sufficiently established to protect the banks. Soil disturbed during ripping operations in riparian reserves could possibly be delivered to nearby stream channels resulting in increased sedimentation. Once vegetation becomes established on the ripped area, soil erosion would no longer be a concern. Approximately 24 road miles will be examined for decommissioning in the future. This additional decommissioning would further reduce impacts to water resources in the CSNM.

Road density provides a means to compare the effect of roads in different areas. If everything else is equal, areas with higher road densities will experience more road-related effects. However, many other factors such as design, location, maintenance, use, surface type, and geology can influence the effect of any particular road. Road density calculations used in this document are based on roads included in the BLM database. It does not include unauthorized cross-country routes, skid roads, or other types of non-system roads. Therefore, road density estimates are conservative. Based on field inventories outside the monument the actual road miles could be 20-40 percent more than what is in the BLM database.

Road densities in some areas of the monument would decrease under the proposed plan. Middle Cottonwood Creek, Scotch Creek, and Camp Creek subwatersheds would experience the greatest decrease (greater than 1 mi./mi.^{2}) in road density (Table 3-2). Subwatersheds that would have road densities reduced by less than 0.5 mi./mi.^{2} include Lower Jenny Creek, Keene Creek, East Fork Cottonwood Creek, and Upper Emigrant Creek. There would be no change in road density for Upper Jenny Creek, Johnson Creek, Middle Jenny Creek, or Fall Creek subwatersheds. Road density within riparian reserves would decrease by 0.79 mi./mi.^{2}, from 3.66 to 2.87 mi./mi.^{2} after completion of the proposed road decommissioning.

The percentage of a subwatershed occupied by roads is an index used in the Oregon Watershed Assessment Manual (Watershed Professionals Network 1999) to determine the potential risk for peak-flow enhancement. Subwatersheds with roaded areas less than 4 percent would have a low potential risk for peak-flow enhancement; a moderate category of potential hydrologic impact would be assigned when roaded area occupies from 4 to 8 percent of a subwatershed; and a high potential for peak-flow enhancement would be assigned to subwatersheds with roaded areas greater than 8 percent. All subwatersheds (level 6) within the CSNM have a low potential risk for peak-flow enhancement (less than 4 percent of the area in roads) except for the East Fork Cottonwood Creek, which has a moderate potential risk (between 4 and 8 percent of the area in roads) (Table 3-3). The East Fork Cottonwood Creek Subwatershed contains I-5 and the Old Siskiyou Highway. Considering that actual road miles could be up to 40 percent greater than what

Table 3-2. Road Density within the CSNM by Subwatershed before and after Proposed Road Decommissioning

Level 5 Watershed	Level 6 Subwatershed	Existing Road Density (mi./mi.^{2})	Road Density after Proposed Road Decom. (mi./mi.^{2})	Change in Road Density (mi./mi.^{2})
Bear Creek	Upper Emigrant Creek	3.65	3.58	-0.07
	Bear Creek Watershed Totals	**3.65**	**3.58**	**-0.07**
Jenny Creek	Upper Jenny Creek	5.84	5.84	0.00
Jenny Creek	Johnson Creek	4.32	4.32	0.00
Jenny Creek	Middle Jenny Creek	4.21	4.21	0.00
Jenny Creek	Keene Creek	4.00	3.76	-0.24
Jenny Creek	Lower Jenny Creek	2.85	2.48	-0.37
	Jenny Creek Watershed Totals	**3.86**	**3.67**	**-0.19**
Klamath-Iron Gate	Fall Creek	5.40	5.40	0.00
Klamath-Iron Gate	Camp Creek	2.13	1.07	-1.06
Klamath-Iron Gate	Scotch Creek	2.02	0.37	-1.65
	Klamath-Iron Gate Watershed Totals	**2.22**	**1.02**	**-1.20**
Cottonwood Creek	East Fork Cottonwood Creek	3.08	3.00	-0.08
Cottonwood Creek	Middle Cottonwood Creek	3.09	1.28	-1.81
	Cottonwood Creek Watershed Totals	**3.09**	**2.43**	**-0.66**

is in the BLM database, the Upper Jenny Creek and Fall Creek subwatersheds may also fall in the moderate potential risk category. Proposed road decommissioning would slightly reduce the area in roads for East Fork Cottonwood Creek Subwatershed. Future road decommissioning in the monument would benefit the Upper Jenny Creek Subwatershed (and also Middle Jenny Creek and Johnson Creek subwatersheds).

Use of the road system in the monument may contribute to impacts on water quality from erosion and subsequent increases in sedimentation, particularly where routes are in close proximity to watercourses. This is especially true for the 70 miles of natural surface roads that are to be left open year-round and those roads that are closed seasonally or year-round but are authorized for administrative use. Increases in visitor use would increase the potential for this type of impact.

Motorized and mechanized vehicles would not be allowed to travel off designated open routes. This would afford substantial protection from surface disturbance and erosion that could lead to degradation of water quality. There is the potential for impacts to water quality from unauthorized vehicle travel off of designated routes in the monument. Law enforcement, as described in the **Transportation and Access** section of Chapter two, would be essential to accomplish this management practice.

Recreation and Visitor Services

Recreational facilities and use that result in surface disturbance (such as trail and parking construction, motorized and mechanized access to dispersed camping areas, concentrated hiking/horseback riding off designated trails, and illegal off-road use by OHVs) may have direct and indirect adverse impacts on water quality. Potential direct impacts would be increased sedimentation of adjacent waterbodies. Indirect impacts would occur if these actions cause erosion and subsequent movement of sediment to a waterbody.

Inadequate waste disposal by recreational users could result in water quality contamination. Affected water quality parameters would be increased pathogen levels.

Table 3-3. Percent of CSNM in Roads by Subwatershed before and after Proposed Road Decommissioning

Level 5 Watershed	Level 6 Subwatershed	Existing % of Area in Roads	% of Area in Roads after Proposed Road Decom.	Change in % of Area in Roads
Bear Creek	Upper Emigrant Creek	2.11	2.07	-0.04
	Bear Creek Watershed Totals	**2.11**	**2.07**	-0.04
Jenny Creek	Upper Jenny Creek	3.32	3.32	0.00
Jenny Creek	Johnson Creek	2.45	2.45	0.00
Jenny Creek	Middle Jenny Creek	2.44	2.44	0.00
Jenny Creek	Keene Creek	2.40	2.27	-0.13
Jenny Creek	Lower Jenny Creek	1.62	1.41	-0.21
	Jenny Creek Watershed Totals	**2.25**	**2.14**	-0.11
Klamath-Iron Gate	Fall Creek	3.07	3.07	0.00
Klamath-Iron Gate	Camp Creek	1.21	0.61	-0.60
Klamath-Iron Gate	Scotch Creek	1.15	0.21	-0.94
	Klamath-Iron Gate Watershed Totals	**1.26**	**0.58**	-0.68
Cottonwood Creek	East Fork Cottonwood Creek	4.86	4.81	-0.05
Cottonwood Creek	Middle Cottonwood Creek	2.19	1.17	-1.02
	Cottonwood Creek Watershed Totals	**3.98**	**3.61**	-0.37

The proposed recreation management attempts to protect monument resources and natural ecosystem processes, including those processes that affect water resources. Examples of management proposals that would protect water resources include restricting motorized vehicles to designated roads; requiring vehicle parking within the road prism and away from wet areas; prohibiting dispersed camping in riparian areas; and not allowing pack or riding animals to overnight within 200 feet of any water's edge.

Levels of visitor use and recreational activities would be monitored throughout the CSNM. Recreational uses found to cause unacceptable resource damage would be limited or prohibited. Prior to any trail or facility construction, project level NEPA analysis would be completed and site-specific impacts to water quality would be addressed.

Livestock Operations

Livestock grazing has the potential to affect water quality through the removal of vegetative cover, trampling streambanks, and bacterial contamination. Many streams, springs, and wetlands in the monument have been adversely affected by concentrated livestock grazing. Direct effects to water quality include increased temperature, turbidity, sediment, bacteria, and pathogens. Accelerated bank erosion and sedimentation lead to increased width-to-depth ratios which have an indirect negative effect on temperature. Observed stream/wetland grazing impacts in the monument have been noted within the past 10 years when the average usage rate was 58 percent of the authorized AUMs. Full use of the authorized AUMs would substantially increase the adverse effects on water quality.

Livestock grazing in the monument would continue to be managed in accordance with the "Standards for Rangeland Health and Guidelines for Grazing Management for Public Lands in Oregon and Washington" (Appendix I). Evaluation of allotments as part of the Standards and Guidelines implementation would assess the effects of livestock grazing on watershed function (uplands and riparian/wetland areas) and water quality. Steps would be taken to ensure that livestock grazing is consistent with current laws and regulations and meets the intent of the monument proclamation. Management specific to allotments would be developed, consistent with the BLM-wide grazing lease renewal process. Results of the Rangeland Health Evaluation and Livestock Impact Study would be used to determine whether livestock grazing is compatible with protecting monument resources. If livestock grazing on specific allotments is found to be incompatible with protecting monument resources, the grazing systems would be modified to achieve compatibility or the allotment would be retired.

Wildland Fire Suppression

The wildland fire management policy in the CSNM would be to take immediate action to control and suppress all wildland fires. Ground disturbing fire suppression activities such as dozer and hand lines, and helispot construction could adversely affect water resources. Soil compaction from heavy equipment reduces infiltration rates and can disrupt surface flow patterns with subsequent affects on streamflows. Soil erosion from disturbed surfaces may result in increased turbidity and sedimentation in streams and other waterbodies. Water quality degradation could occur from accidental dropping of retardant or foam on or near surface waters. Effects on water quality would either be direct or indirect, depending on the proximity of the activity to a waterbody. Fire suppression guidelines for the CSNM include minimizing the use of dozers, the size of dozer lines, and the construction of helispots. Dozer lines would be prohibited within or along stream channels or dry draws, unless they are perpendicular to stream channels or dry draws. The construction of properly designed and adequately spaced water bars on all fire lines would reduce the potential for erosion and soil delivery to waterbodies.

Utility Rights-of-Way and Road Rights-of-Way

Construction of new utility facilities within the CSNM would likely be restricted to the three existing corridors. These corridors cross numerous waterbodies and riparian areas. Vegetation removal and ground-disturbing activities associated with construction of new utility facilities have the potential to directly and indirectly impact water resources. Potential impacts include increases in erosion and sedimentation, water temperature, and runoff. Any applications for new utility facilities would be thoroughly reviewed and analyzed for potential impacts to water resources.

New linear non-road/utility rights-of-way would be minimized in the CSNM. Examples of linear non-road/utility rights-of-way include water pipelines and ditches. Potential adverse affects from water diversions would be reduced or disrupted flows. Surface disturbance from placement of water pipelines and ditches could result in erosion and sedimentation. Few new road rights-of-way are anticipated as most are already in place in the OGEA as a result of past timber practices on all land ownerships. New road rights-of-way have the potential to adversely impact water resources as a result of vegetation clearing and ground disturbance. Direct impacts could include increased sedimentation, turbidity, and temperature where a road is constructed across or adjacent to a water body. Sedimentation resulting from both road and non-road rights-of-way would either be a direct impact if the soil disturbance occurred in close proximity to a waterbody, or an indirect impact if it was transported to a waterbody or downstream from the original source. New road rights-of-way would also result in soil compaction and possibly disruption of both subsurface and surface flows. Indirect impacts to water resources could include reduced time to hydrograph peak and increased magnitude and frequency of peak flows. Every measure would be taken to minimize negative rights-of-way impacts to monument resources. Rights-of-way should avoid adverse effects that retard or prevent attainment of the Aquatic Conservation Strategy objectives. Efforts would be made to ensure that all other options are considered before new non-utility rights-of-way in the CSNM are approved. If no other options were available, the authorization may be denied for non-road rights-of-way or BMPs would be incorporated to minimize affects on water resources.

Inventory, Monitoring, Research, and Adaptive Management

Inventory, monitoring, and research activities that provide information about the characteristics or conditions of hydrographic features (streams, springs, wetlands, etc.) or watershed conditions within the monument would be encouraged. It is anticipated that these types of activities would not result in any significant surface disturbance or vegetation removal and therefore would not have any noticeable impact on water resources.

Inventory, monitoring, and research activities conducted to benefit other resources may involve surface disturbance and/or vegetation removal. Such actions may cause temporary water quality degradation in the immediate vicinity. Surface disturbing inventory, monitoring, and research activities would be evaluated on a project-specific basis to determine whether the impacts to water resources would be acceptable.

Adaptive management would have a beneficial affect on water resources providing that the monitoring program is sufficient to determine the impacts of management actions and conclusions and necessary management changes are achieved in a timely manner.

PROPOSED ACTIONS WITH NO REASONABLY FORESEEABLE EFFECTS

No reasonably foreseeable effects on water resources would be expected from proposed decisions listed under the following sections of this plan: *Collections/Special Forest Products, Wilderness Study Area Protection.*

Effects on Soils

INTRODUCTION

The majority of the soils within the Cascade-Siskiyou National Monuent (CSNM) are influenced by montmorillonitic clays, have high rock content and/or are shallow in depth. These soil characteristics make the soils of the CSNM very vulnerable to impacts from management activities and recreational use. Two main concerns regarding impacts to soils are soil erosion and soil productivity.

Soil erosion is the detachment and movement of soil by water, wind, ice, or gravity. Two detrimental actions occur when soil erosion by water is accelerated. First, eroded soil particles, especially clay particles, often become suspended in water forming sediments that affect water quality. Second, soil decreases in depth when the soil profile loses more particles than it accumulates. Loss of soil depth diminishes water holding capacity and rooting space available for plant growth resulting in a reduction in soil productivity.

Nutrient recycling is another soil productivity concern. It is important that nutrients contained in organic matter, available from needle/leaf fall, plant and animal mortality, animal fecal matter, etc., be consumed, assimilated by insects and soil organisms and returned to the soil. Soil nutrient recycling is very important to soil health, and the plants and animals that depend on it. As a plant community matures and produces more organic material, the soil organism population increases and recycles more organic material thus supplying nutrients back to the plants, improving soil structure, water holding capacity and disease suppression. This process continues until a disturbance agent, such as fire, insect infestation, human activities, etc., breaks the cycle. At this point the soil-plant relationship becomes unbalanced, and soil organism types and number are affected, which ultimately affects the health of the soil.

SUMMARY OF EFFECTS

Impacts to soils from the proposed plan would primarily result from road decommissioning, forest management and prescribed burning. Most negative impacts would be direct and short-term. Over the long term, soils in the monument would indirectly benefit from proposed management as project areas stabilize and the risk of high severity fire is reduced.

Approximately 53 miles of existing roads would be decommissioned resulting in some negative short-term effects to soils. Most of these roads are in the southern portion of the monument and an increase in erosion and sedimentation would occur the first few years after the decommissioning. Over the long term, the soil would be put back into producing vegetation and natural drainage patterns would become stable.

This plan proposes forest management activities on up to 5,640 acres over the next 10 years in order to protect, restore, and facilitate the development late-successional and old-growth habitat in the OGEA. Treatments would also be designed to reduce high fire hazard in the wildland-urban interface. Treatments would primarily include thinning in dense tree stands and burning the excess fuel created by the thinning. Prescribed underburning and pile burning could take place on up to 3,700 acres in the OGEA. Although moderate direct, short-term negative impacts to the soil resource would occur on these acres, Best Management Practices (BMPs) should limit the effects.

DIRECT AND INDIRECT EFFECTS OF PROPOSED MANAGEMENT

OGEA Management

The primary OGEA management tools would be forest thinning and prescribed fire. Potential effects of thinning on soil resources include soil compaction and increased erosion and sedimentation from soil disturbance. Potential effects from burning include soil erosion and sedimentation.

OGEA treatments in Habitat Type 3 would have the greatest potential for affecting soil resources due to the large number of acres proposed for thinning (3,840 acres) and burning (1,900 acres). However, the majority of the proposed Habitat Type 3 treatments would be dispersed across the OGEA. Yarding activities in Habitat Type 3 would be minimal and not likely to have any effect on erosion rates or sedimentation. Prescribed burning on 1,900 acres in OGEA Habitat Type 3 would consist of selective handpile burning which could create isolated areas with altered soil structure and hydrophobic soils.

Proposed treatments in Habitat Type 5 would take place on approximately 1,600 acres and would primarily impact soils through yarding and prescribed burning activities. Ground-based yarding, especially with tractors, would result in soil compaction and possibly soil erosion. Existing skid roads will be used where feasible. Prescribed burning in Habitat Type 5 would consist of handpile burning during the first entry and then underburning during a second entry. Prescribed underburning would be conducted during weather conditions when moisture levels allow for low intensity fire with minimal duff consumption.

DEA Management

Treatments in the Diversity Emphasis Area (DEA) to protect, maintain or restore native plant communities would primarily consist of pilot studies limited to 10 acres in size. These studies, which include prescribed handpile burning, underburning, broadcast burning, weed treatments and thinning, could have direct impacts to soils in these areas. Treatments that involve broadcast burning would be limited to 200 acres per year with no more than 100 acres in a drainage area. These would be fairly high intensity burns with the intent to eliminate the duff layer in grasslands and to reinitiate shrub stands. Broadcast burning could bare the soil for a short time period and cause short-term increases in erosion rates within the treatment areas. Over the long term, however, these treatments could increase soil productivity and reduce the risk of high severity fire in these areas.

Management of Riparian Areas and Aquatic Resources

This plan proposes to protect and restore riparian areas through planting and seeding native species, forest thinning, fencing and other livestock management techniques. Soils in riparian areas are more easily damaged due to the increased presence of water. Short-term direct impacts could result from the disturbance created during the planting and seeding of native species. Once established, these species should help protect the soil from additional disturbance. Short-term impacts in the form of soil compaction and erosion could occur during thinning or other restorative activities. Prescribed fire may be allowed to back into riparian reserves. Prescribed fire in these areas should be low intensity and would directly impact soils. In areas where cattle congregate in riparian areas, soil compaction and erosion is often evident. Fencing or other livestock management techniques would help protect soils in these areas.

Weed Management

Throughout the monument, non-native annual grasses have replaced native bunchgrasses as the dominant vegetation. A major objective of the proposed plan is controlling noxious weeds through treatments such as manual weeding, bio-control, spot spraying with herbicides and hot foam, and prescribed fire. The direct impacts of noxious weed treatments would be minimal. Prescribed burning could expose soils and increase the potential for erosion in the short-term. In the long term, the restoration of native perennial bunchgrasses would help provide better protection for soils as their root systems are more adept at holding soil in place than are the roots of non-native annual grasses. Some noxious weeds and non-native annual grasses in the monument are conducive to high severity fire which can damage soils. The restoration of native species would reduce this risk. The long-term effects of noxious weed control would be beneficial to soil resources as native species are restored.

Transportation and Access

Roads directly and indirectly affect soils through soil compaction, erosion and the removal of existing vegetation. Transportation management objectives for the monument include reducing the amount of existing roads primarily through decommissioning. Proposed transportation management actions that could potentially affect soil resources include road decommissioning, road construction, drainage improvement, maintenance, and decommissioning.

Natural and mechanical decommissioning would take place on approximately 53 miles of existing roads. Approximately 21 miles of road would have drainage facilities improved and then blocked which would reduce erosion and sedimentation short-term. Approximately 4 miles of road would be upgraded and left open. Across the monument, the reduction in road density could benefit the soil resource through decreased compaction and the revegetation of these areas.

Road construction in the monument would take place under limited circumstances and could directly impact soils through the removal of vegetation compaction and erosion. Road construction would be designed to minimize impacts to soils.

Motorized and mechanized vehicles would not be allowed to travel off designated open routes. This would afford substantial protection from surface disturbance and erosion.

Recreation and Visitor Services

Recreational facilities and use that result in surface disturbance, such as trail and parking construction, motorized and mechanized vehicles pulling no more than 50 feet off designated roads to access existing dispersed campsites, concentrated hiking/riding off designated trails, and illegal off-road use by off-highway vehicles (OHVs), may have direct and indirect adverse impacts on soils. Potential direct impacts would be increased soil compaction and erosion.

The proposed recreation management attempts to protect monument resources and natural ecosystem processes, including those processes that affect soils. Examples of management proposals that would protect soils include restricting motorized vehicles to designated roads, requiring vehicle parking within the road prism and away from wet areas, and prohibiting dispersed camping in riparian or other sensitive areas.

Levels of visitor use and recreational activities would be monitored throughout the CSNM. Recreational uses found to cause unacceptable resource damage would be limited or prohibited. Prior to any trail or facility construction, project level NEPA analysis would be completed and site-specific impacts to soils would be addressed.

Livestock Operations

Livestock grazing has the potential to affect soils through the removal of vegetative cover and the trampling of streambanks. Direct and indirect effects to soils include increased compaction and accelerated erosion, particularly on steep slopes or in wet areas.

Livestock grazing in the monument would continue to be managed in accordance with the "Standards for Rangeland Health and Guidelines for Grazing Management for Public Lands in Oregon and Washington" (Appendix I). Evaluation of allotments as part of the Standards and Guidelines implementation would assess the effects of livestock grazing on soils. Steps would be taken to ensure that livestock grazing is consistent with current laws and regulations and meets the intent of the monument proclamation. Management specific to allotments would be developed, consistent with the BLM-wide grazing lease renewal process. Results of the Rangeland Health Evaluation and Livestock Impact Study would be used to determine whether livestock grazing is compatible with protecting monument resources. If current livestock operations are found incompatible with protecting soils and associated resources, changes to existing grazing management practices in these areas would prevent continued degradation and allow for future restoration of problem areas.

Wildland Fire Suppression

The wildland fire management policy in the CSNM would be to take immediate action to control and suppress all wildfires. Ground-disturbing fire suppression activities such as dozer and hand lines, and helispot construction could adversely affect soils. Soil compaction and increased erosion could result from heavy equipment. Fire suppression guidelines for the CSNM include minimizing the use of dozers, the size of dozer lines, and the construction of helispots. The construction of properly designed and adequately spaced water bars and fire line rehabilitation on all fire lines would reduce the potential for erosion.

Utility Rights-of-Way and Road Rights-of-Way

Construction of new utility facilities within the CSNM would likely be restricted to the three existing corridors. Vegetation removal and ground disturbing activities associated with construction of new utility facilities have the potential to directly and indirectly impact soil resources. Potential impacts include increases in compaction, erosion and sedimentation. Any applications for new utility facilities would be thoroughly reviewed and analyzed for potential impacts to soils.

New linear non-road/utility rights-of-way would be minimized in the CSNM. Examples of linear non-road/utility rights-of-way include water pipelines and ditches. Surface disturbance from placement of water pipelines and ditches could result in erosion and sedimentation. Few new road rights-of-way are anticipated as most are already in place in the OGEA as a result of past timber practices on all land ownerships. New road rights-of-way have the potential to adversely impact soil resources as a result of vegetation clearing and ground disturbance. Direct impacts could include increased compaction and erosion. Efforts would be made to ensure that all other options are considered before new non-utility rights-of-way in the CSNM are approved.

Inventory, Monitoring, Research and Adaptive Management

Activities associated with inventory, monitoring and research are not anticipated to result in any significant surface disturbance or vegetation removal and therefore would not have any noticeable impact on soils. Inventory, monitoring, and research activities conducted to benefit other resources may involve surface disturbance and/or vegetation removal. Surface disturbing inventory, monitoring, and research activities would be evaluated on a project-specific basis to determine whether the impacts to soils would be acceptable.

PROPOSED ACTIONS WITH NO REASONABLY FORESEEABLE EFFECTS

No reasonably foreseeable effects to soils would be expected from proposed decisions listed under the following sections of this plan: *Collections/Special Forest Products, Wilderness Study Area Protection.*

Effects on Terrestrial Wildlife Species and Habitats

INTRODUCTION

The Cascade-Siskiyou National Monument is home to a remarkable variety of terrestrial wildlife species, including insects, amphibians, reptiles, birds, and mammals. The monument is home to the bald eagle and northern spotted owl, both of which are listed as threatened species under the Endangered Species Act. Also at home in the monument are the following BLM special status species: peregrine falcon, great gray owl, American marten, northwestern pond turtle, Franklin's bumblebee, and the mardon skipper. In addition, the monument includes lands that have been designated as Critical Deer Winter Range by the Oregon Department of Fish and Wildlife.

SUMMARY OF EFFECTS

Terrestrial wildlife species are interrelated and interdependent; impacts on any one are likely to impact others. Impacts to animal populations occur primarily through activities that disturb habitat such as thinning of vegetation, prescribed fire, and grazing. Furthermore, the use of facilities such as roads, campgrounds, and hiking trails has the potential to directly disturb wildlife species. This plan outlines ways to protect and enhance monument resources and attempts to move toward landscape-level restoration, which would benefit all terrestrial wildlife species.

Impacts to all special status wildlife species would be avoided to the extent possible in management activities planned for the monument. This will be accomplished either through pre-activity surveys to locate occupied sites, or through seasonal and treatment restrictions on all habitat determined to be suitable. Nest sites of bald eagles and northern spotted owls would be protected from both seasonal disruption and from habitat disruption in their vicinity. Also occurring in the monument are a variety of terrestrial wildlife species appearing on the BLM's Special Status Species List (Appendix N). All special status species would be considered when management activities are being planned.

The goals and objectives described for the Old-Growth Emphasis Area (OGEA), Diversity Emphasis Area (DEA) and Riparian Areas would enhance habitat for wildlife throughout the monument by facilitating a return to native vegetation and historical conditions across the landscape. Activities such as road decommissioning and improvements, forest restoration and fuels reduction, noxious weed treatments, and enhanced large wood recruitment would result in improved habitat for terrestrial wildlife species.

The amount of road decommissioning proposed in this plan would dramatically benefit some terrestrial wildlife species. Overall, a 21 percent reduction in road densities would help terrestrial wildlife species through the restoration of habitat connectivity and the removal of wildlife dispersal impediments.

Grazing at current levels will continue utilization of habitats otherwise available to native wildlife species. Many wildlife concerns are directly related to plant community composition and structure. Throughout the monument, a reduction in the abundance of palatable forage, a preponderance of annual grasses with hazardous awns, and the loss of woody riparian vegetation have had a direct impact on wildlife. Ongoing research and monitoring, pilot studies proposed in the DEA, and the monument's Adaptive Management Strategy would improve the BLM's understanding of historical and current conditions across the landscape as they relate to wildlife. These efforts, in addition to the ongoing Livestock Impact Study, will enhance understanding of the impacts of livestock grazing on wildlife and help direct management in a manner that protects wildlife species and associated habitats.

The removal of excess fuels within the monument landscape, both through manual clearing and through the re-introduction of fire to these historically fire-influenced landscapes will improve wildlife habitat. By reinvigorating forage species and opening densely overgrown stands, the use of prescribed fire would provide wildlife with increased opportunities for foraging and movement. With management objectives and activities that emphasize the restoration of vegetative communities within the monument, native wildlife species habitat conditions will be directly and positively enhanced.

DIRECT AND INDIRECT EFFECTS OF PROPOSED ACTIONS

OGEA Management

The OGEA is home to a diverse suite of wildlife species. Species dependent upon late-successional and old growth forests include northern spotted owls, great gray owls, American martens, and fishers. The primary management concerns in the OGEA that affect wildlife are habitat fragmentation, fire exclusion, high road densities, noxious weeds, and impacts to riparian habitat and aquatic connectivity from past management activities. As they apply to terrestrial wildlife species, these concerns pertain directly to habitat connectivity or to habitat protection. This plan would begin to address those concerns through restorative actions (e.g., thinning, prescribed fire, road decommissioning, native grass seeding), and protective actions (e.g., reducing the risk of wildland fire near existing late-successional habitat through thinning and prescribed fire).

Over time, these management activities will help improve habitat connectivity across the landscape, particularly in the area of connectivity concern. The reintroduction of fire into these ecosystems will hasten the return of historic wildlife habitat conditions. Management activities proposed in the OGEA would help promote late-successional conditions and wildlife species associated with these forests (e.g., northern spotted owl and pileated woodpecker) will benefit from larger areas of late-successional forest habitat.

Short-term improvements to terrestrial wildlife habitat will occur as connectivity issues are addressed (as roads are closed and as overstocked understories in mature stands are thinned); long-term improvements will occur as small conifers are released through thinning. Some short-term impacts are likely. As management activities take place, existing wildlife populations may be displaced. Any such displacement is likely to be off-set by subsequent habitat improvement and wildlife species population stabilization.

No treatments are planned within Habitat Type 1 and only limited pilot studies are proposed in Habitat Type 2. In the short term, excluding treatments from these stands would ensure the continuation of habitat critical to the persistence of species dependent on late-successional forests, such as the northern spotted owl. Indirect impacts of this treatment regimen, combined with continued exclusion of fire, would include increases in high tree densities, fire hazard, risk of insect infestation, and large tree mortality. Over time, it is likely that these processes will lead to attrition of Habitat Types 1 and 2. This decrease in breeding and foraging habitat may affect wildlife species dependent on late-successional forests.

Habitat Type 3 currently does not provide habitat of late successional species. Proposed thinning in Habitat Type 3 may disturb some wildlife species during thinning activities. In the long term this alteration in stand structure will provide an increase in available habitat for a variety of wildlife species, and will serve to restore connectivity of late successional and old growth habitat in the OGEA.

The proposed treatments (primarily thinning) to Habitat Type 5 (spotted owl dispersal habitat) may cause some disruption to dispersal patterns of northern spotted owls in the short term, especially during thinning activities. Any such impacts would be localized to the immediate area of treatment. These impacts would be mitigated through seasonal restriction of such treatment activities, and are expected to provide long-term benefits to late-successional forest species as Habitat Type 5 stands develop into Habitat Type 1 and 2 stands, increasing connectivity throughout the OGEA.

Proposed management activities in the OGEA that have the potential to impact nest sites of northern spotted owls and bald eagles would follow seasonal restrictions established by the U.S. Fish and Wildlife Service. The restrictions are as follows: northern spotted owl—within ¼ mile and between March 1 and September 30; bald eagle—within 1/3 mile and between February 1 and July 15. These restrictions would protect nest sites from disturbance during the breeding season.

DEA Management

This plan identifies several primary concerns that affect wildlife in the DEA: noxious weeds; existing impacts to riparian areas; the loss of fire-dependent plant communities; and impacts to wildlife habitat from past management activities. The effects of weed treatments and proposed management for riparian areas are described in the Weed Management and Riparian Areas Management sections below.

The pilot studies proposed within the DEA would be designed to provide better information regarding the effectiveness of different management tools for protecting and restoring the area's ecological diversity. In the short term, the effects from treating such a limited number of acres across the landscape would not adversely impact terrestrial wildlife populations. Likewise, any beneficial effects to wildlife would be limited to the project site and would not change or improve wildlife habitat conditions over the majority of the DEA.

Over time, wildlife habitat in the DEA has been degraded through the exclusion of natural fire events. This plan proposes to study the effectiveness of prescribed burning on a limited number of acres a year in the DEA (10 to 100 acre study sites). The limited re-introduction of fire into this landscape is expected to improve wildlife habitat in these areas by returning grasslands and shrublands to earlier states of succession.

In general, existing conditions in wildlife habitat may continue to degrade in these plant communities. However, the knowledge gained from these studies in association with the monument's adaptive management strategy would help improve long-term future habitat and species management. Pilot studies that could impact terrestrial wildlife habitat would be considered on a project-specific basis. These activities would be approved only if the expected benefit was determined to be yield greater understanding of monument ecosystem functions, and to outweigh any potential impacts to existing wildlife populations and habitats.

Vegetative Management in the Wildland-Urban interface (WUI) (DEA & OGEA)

Vegetative treatments and prescribed fire in the wildland-urban interface (WUI) would result in the creation of more open forest habitat. Short-term negative impacts to wildlife species from these activities are unavoidable. Species dependent on existing conditions would be displaced by removal of their existing habitat. Burrowing rodents may suffer loss of hiding cover, forage, or mortality when fire is used to remove decadent grass and shrubs, and when slash piles are burned. Reduction in rodent populations is generally short in duration, but is likely to result in a corresponding—and equally short in duration—decline in reproduction in predatory species dependent on rodents as a prey source. For example, two northern spotted owl (a federally listed threatened species) sites (one owl core area and dispersal and roosting/foraging habitat within ¼ mile of another owl core area) are located within the WUI.

Prescribed fire, chainsaw operation, and other potentially disruptive activities in these locales would be restricted to outside the breeding season of the northern spotted owl (March 1 to September 30). Again, even with this restriction, some indirect impact on the species is possible. Prey species may experience a significant population decline if prescribed fire adversely impacts their habitats (e.g., removal of hiding cover, removal of forage, and fire-induced mortality). This in turn may result in a short-term reduction in reproductive success within these northern spotted owl sites. The limited spatial and temporal extents of proposed treatments in the WUI are unlikely to cause a significant impact to any wildlife populations. These treatments will result in the long-term improvement of wildlife habitat by returning grassland and shrubland to a more productive earlier seral stage. Forest habitat will be improved for species which prefer more open forest settings and may benefit species that prefer late-successional forests.

Management of Riparian Areas and Aquatic Resources

Many terrestrial wildlife species are dependent on riparian areas for cover, forage, movement, or breeding, as well as for frequently scarce water. The main goal of riparian area management would be to protect and restore riparian features critical to ecosystem health in order to support the monument's diverse populations of plants and animals. Proposed restorative treatments (e.g., road decommissioning, fencing springs and wetlands, planting vegetation, and altering livestock use patterns) would all contribute to the return of riparian areas to proper functioning conditions. Fencing of riparian areas may impact some wildlife species by excluding them from water sources or by restricting their movement across the landscape.

The improved function of riparian areas would benefit all terrestrial wildlife species that utilize this type of habitat.

Weed Management

Noxious weeds can impact wildlife indirectly by replacing palatable native species with non-palatable weed species for herbivores such as deer and elk. Noxious weed management to restore these areas of infestation through manual removal, selective spraying, controlled grazing, biological control agents, and prescribed fire coupled with native species seeding is likely to result in an improvement in habitats available to terrestrial wildlife species. Removal of these species, though temporarily removing cover, would facilitate the return of native species in the long term. The recovery of native vegetation structure and function would, in turn, improve habitat and populations of native wildlife species. Although removal of noxious weed species is a management priority, it is estimated that funding and other constraints will limit the treated areas to approximately 2,000 acres each year. There is the potential for continued degradation of wildlife habitat in untreated areas.

Transportation and Access

Terrestrial wildlife species are negatively affected by high road densities. Roads act as barriers to connectivity of wildlife habitat. These barriers hinder movement, foraging, and breeding of various wildlife species. The plan proposes to decommission 53 miles of road and identifies an additional 21 miles that will be considered for decommissioning in future planning actions. Road decommissioning contributes to the restoration of wildlife habitat by restoring connectivity and returning large areas of habitat to a more natural condition. Road densities would be slightly decreased in northern spotted owl core areas, moderately decreased in elk management areas and riparian reserves, and significantly decreased in big game winter range (Table 3-4).

These road density reductions will enhance wildlife habitat through the reduction of disturbance by motor vehicle traffic, and through the restoration of connectivity to large blocks of wildlife habitat. This is especially true in the Big Game Winter Range where road densities will be reduced to less than the 1.5 mi / mi.^{2} recommended by Oregon Department of Fish and Wildlife for Big Game Winter Range areas.

As specified in the proclamation, motorized and mechanized travel off of designated routes would not be allowed, except in limited situations. This would afford protection to wildlife species from the direct effects of vehicle use off of designated routes, including noise and the presence of people and vehicles in the area, and possibly disrupting wildlife travel patterns, nesting activities, roosting, foraging, and migration. With these restrictions in place, wildlife would be protected further from the indirect effects of travel off of designated routes, including removal and damage of vegetation and habitat, erosion from surface disturbance causing loss of habitat, and degradation of water quality. There is the potential for direct and indirect impacts to wildlife from unauthorized vehicle travel off of designated routes in the monument. Education and law enforcement efforts as described in Chapter 2 would reduce the occurrence of unauthorized use off of these routes.

Table 3-4. Road Densities within Special Reserves in the CSNM (Excluding Previously Decommissioned Roads)

Item	Miles of Road	Area (mi.^{2})	Road Density (mi./mi.^{2})	Road Density After Proposed Plan Decommissioning (mi./mi.^{2})
Northern Spotted Owl Core Areas (BLM Only)	9.74	3.14	3.10	2.96
Elk Management Areas	68.48	21.57	3.17	2.64
Big Game Winter Range	23.48	11.60	2.02	0.29
Riparian Reserves (BLM Only)	60.63	16.56	3.66	2.87

Recreation and Visitor Services

All types of recreation have the potential to impact wildlife. Inadvertent or unintentional harassment of wildlife occurs from the use of developed recreation sites: hikers (on and off trails); and motorized and mechanized vehicle use. Impacts to terrestrial wildlife species due to recreation would be minimized through regulating areas and types of use, and size of groups. Seasonal closures are often an effective means of protecting terrestrial wildlife species from recreational impacts. Collections of terrestrial wildlife, or parts thereof, are prohibited unless otherwise regulated by the Oregon Department of Fish and Wildlife.

To minimize any impacts to wildlife through recreational activities, specific management strategies are proposed in this plan. For example, to protect peregrine falcons nesting on Pilot Rock, a seasonal closure on climbing and hiking which accesses the south and east sides of the rock will be in place from February to July 30 each year. In the south zone, size of hiking and camping groups would be limited to 12. Restrictions such as these and others set forth in this plan will benefit wildlife species through minimizing disruption of their habitats and life-cycles.

Snowmobile use in the monument is unlikely to have a significant impact on wildlife species. During the period of use for snowmobiles, deer, elk, and many other wildlife species generally move to lower elevations or more southerly latitudes to escape the cold and snow. Species that are known to be present in the vicinity of the snowmobile trails during the period of use (e.g., northern spotted owls, great gray owls, American martens, snowshoe hares) tend to be highly mobile and are not impeded by roads or snowmobile trails as they move through this habitat, nor are they highly susceptible to the intermittent noise produced as snowmobiles pass through.

Livestock Operations

Livestock grazing has the potential to indirectly impact wildlife by changing vegetation composition, structure, and function. Current livestock operations within the monument are likely to result in a reduction of forage available to native herbivores (e.g., deer and elk) as well as reductions in vegetative ground cover for ground-nesting birds, burrowing rodents, and other wildlife species dependent on ground cover for protection, food, and breeding sites. In the short term, these impacts would continue in areas of high livestock utilization. Over the past ten years, however, livestock lessees used approximately 58 percent of the authorized AUMs. If all the permitted AUMs were put to use, current impacts to terrestrial wildlife would be expected to increase.

This plan describes the long-term process for making decisions regarding livestock grazing. Completion of the Livestock Impact Study and the Rangeland Health Evaluations are an integral part of this process. The study will provide data regarding specific impacts of livestock on terrestrial wildlife and terrestrial wildlife habitats within the monument. The effects of livestock grazing on wildlife species would also be assessed in the evaluation of allotments as part of the Standards and Guidelines (Appendix I). The information derived from the Livestock Impact Study and the Rangeland Health Evaluations will be used to determine if grazing is "incompatible with protecting the objects of biological interest." If current livestock operations are found incompatible with protecting the terrestrial wildlife, changes to existing grazing management practices in these areas would prevent continued degradation and allow for future restoration of wildlife habitat.

Wildland Fire Suppression

Wildland fire suppression methods have the potential to directly and indirectly impact terrestrial wildlife species and their habitats. Direct impacts are most likely to result from suppression techniques that alter habitat connectivity. Indirect effects of fire suppression may include increases in high tree densities, fire hazard, risk of insect infestation, and large tree mortality. However, with existing high fire hazard levels created by decades of fire exclusion, continued suppression is necessary to protect existing late-successional forests and other important wildlife habitats from stand-replacing fire events.

The impact of wildfire suppression to terrestrial wildlife species in the monument will be minimized through following guidelines set forth in this plan. These guidelines minimize habitat disruption through directing the use of the minimum interventions required for protection of the monuments resources. Damage to northern spotted owl core areas by fire and suppression efforts will be kept to a minimum. Retardant will not be dropped on active nests of bald eagles or northern spotted owls.

Utility Rights-of-Way and Road Rights-of-Way

Requests for major utility rights-of-ways (ROWs) outside of exiting corridors are expected to be minimal. Few new road ROWs are anticipated. Any rights-of-way agreements granted would be designed to avoid adverse effects to the monument's terrestrial wildlife. Where legally possible, these projects would be designed outside areas likely to affect wildlife and efforts will be made to ensure that all other options are considered before activities in areas likely to affect wildlife are approved. If no other options were available, mitigating measures would be in incorporated to maintain habitat/ecosystem integrity. However, there would likely be short-term impacts due to activity required for road construction and long-term consequences from roads in areas likely to affect wildlife. Short-term impacts would arise from habitat removal and noise from equipment operation. Long-term impacts would be due to habitat fragmentation by new road corridors through previously contiguous habitat.

Inventory, Monitoring, Research, and Adaptive Management

Non-surface disturbing research activities that focus on increasing the knowledge of the distribution and presence of wildlife species in the monument, or which would help restore and protect wildlife habitat, would be encouraged. Monitoring initiated as part of the adaptive management framework (Appendix C) would provide information regarding the condition of wildlife species in the monument and would provide a mechanism for alteration in management if it were determined that impacts on wildlife species or habitat were occurring.

Projects involving inventory, monitoring, research, and adaptive management must be considered on a project-by-project basis to determine the potential for impacts on terrestrial wildlife species. Collection of terrestrial wildlife specimens, while generally prohibited, may be permitted in some situations where the value of such collecting outweighs potential impacts to the terrestrial wildlife species population in question.

Wilderness Study Area

The WSA will continue to contribute to the preservation of important wildlife habitat. No short-term treatments are planned in these areas, and thus existing habitat conditions will likely persist. If RNA plans are implemented, there will likely be little impact to wildlife species due to the restrictive nature of these plans.

PROPOSED ACTIONS WITH NO REASONABLY FORESEEABLE EFFECTS

No reasonably foreseeable effects to the OGEA would be expected from proposed decisions listed under the following sections of this plan: *Collections/Special Forest Products.*

Effects on Special Status Plant Species

INTRODUCTION

The Cascade-Siskiyou National Monument's unique geology, climate, and topography contribute to the presence of many rare and endemic plants. The region including and surrounding the monument has one of the highest rates of plant endemism in the United States (The Nature Conservancy, 2000). The monument contains known populations of 33 plant species that are on the current Special Status Species list (see Appendix N), including Gentner's fritillary, which is listed as endangered under the Endangered Species Act.

Occurrences of special status plants are documented in grasslands, chaparral, oak woodlands, conifer communities, rocky openings, vernal pools, seeps, and riparian areas within the Diversity Emphasis Area (DEA) and in the Old-Growth Emphasis Area (OGEA). Open grasslands, chaparral and oak woodlands, and conifer communities blend into a mosaic on the landscape, providing a diversity of habitats for groups of special status plants.

SUMMARY OF EFFECTS

This analysis of effects is based on proposed management actions at the landscape level; spatially explicit treatment areas are not known at this time. Past observations, literature, and professional judgment all are utilized to evaluate effects. Where surveys have not been conducted, presence is assumed in communities capable of supporting special status plants.

Impacts to special status plants occur primarily from the direct effects of ground disturbance, and indirect effects from habitat modifications that result in changes to the structure, function, and composition of the native plant communities with which special status plant species are associated. Impacts can range from adverse to beneficial on multiple temporal scales. Activities that have the greatest potential for impacts to special status plants and their habitats are livestock grazing, vegetation management activities, prescribed fire, and fire suppression.

Pre-treatment surveys for special status species, limits on surface-disturbing activities in these areas, mechanisms to control visitor use, and an active weed control program all contribute to the protection of special status plant species, as well as promote their recovery. Restrictions on cross-country travel by motorized and mechanized vehicles will reduce one of the primary disturbances to special status populations from recreational activities.

The magnitude or significance of beneficial or adverse effects can depend on the duration and the severity of the event, the type of activity, the time of year, the type of plant community, and species involved. Some short-term adverse affects to individuals and localized populations from proposed activities can be offset by long-term benefits to the plant community. Proposed monument management actions that include project design features are unlikely to trend any special status plant toward federal listing.

A programmatic consultation for the federally listed plant Gentner's fritillary (*Fritillaria gentneri*) has occurred (USDI 2003) and the monument plan, with conservation measures, is consistent with the "May effect, but will not likely adversely effect" determination made for the listed plant.

DIRECT AND INDIRECT EFFECTS OF PROPOSED MANAGEMENT

OGEA Management

Management within the OGEA focuses on enhancing connectivity and habitat for species associated with late-successional forests and protecting the existing late-successional forest from severe disturbance such as high severity wildland fire. Understory forest thinning inside and outside of the wildland-urban interface (WUI), limited commercial harvests, and prescribed fire to reduce fragmentation can impact special status plants within the OGEA. Any ground-disturbing activity has the potential to affect adversely existing special status plant populations, depending on the timing (season) and intensity of the treatment. Direct effects can occur to individuals and localized populations of special status plants from physical trampling by crews and machines, yarding, piling, or burning of thinned material.

Prescribed fire, including hand-pile burning, underburning and broadcast burning, has the potential to have short-term adverse affects to individuals and localized populations (especially vascular plants) if burning is done during the growing season (spring). Lower intensity burns would have reduced adverse effects. Burning can directly kill growing plants, and reduce annual reproduction and population size in the short-term; fall burning during the dormant period, however, should have reduced effects. Pile burning can also bake roots and bulbs of special status plants. Soil disturbance from thinning activities can result in increased levels of noxious weeds in affected stands, especially weedy thistle species. These invasive plants can compete with special status plants.

Over the long term, the resulting habitat following thinning or burning activities can provide better growing conditions (increased light and moisture) and reduced fuel loads for many special status plants associated with the OGEA. Reducing the risk of stand-replacing wildland fire in the OGEA by reducing fuel loads should have a long-term beneficial effect for existing special status plants and those in adjacent evergreen, hardwood, and chaparral communities.

Several species found in the white fir conifer communities in the OGEA are more adapted to higher canopy cover and later successional states (Appendix N), including several species of rare fungi. In these areas, the management objectives for the OGEA should be, in the long term, of benefit to these species by maintaining later successional states, restoring connectivity, and reducing fuel loads.

The full protection of all special status plant sites from treatments, i.e., buffering all sites from any disturbance, can have long-term deleterious effects for many species by creating small closed canopy, sub-optimal habitats, and creating pockets of dense fuels that can burn hot and adversely affect populations during wildland fires. For other species, like those associated with wetlands and seeps, full protection is an appropriate management action.

Pre-disturbance surveys, documentation of populations, and implementation of site-specific mitigating measures during project planning and implementation will reduce any direct or indirect effects to special status plants.

DEA Management

Many special status plant locations are documented in the DEA. Management specific to the DEA primarily involves the implementation of pilot studies in fire-dependent plant communities. The elimination of all special status plant sites from these pilot studies would limit the opportunity to study the beneficial and adverse effects from different types of management activities. Pre-disturbance surveys, documentation of populations, and implementation of site-specific mitigation measures during project planning and implementation will reduce or eliminate adverse effects to special status plant species.

Management activities designed to reduce fire hazard could take place in up to 50 percent of the DEA plant communities located in the WUI. Treatments on approximately 320 acres in a relatively concentrated area would increase the likelihood of direct and indirect effects in special status plant communities. Buffering all sites from any disturbance could have long-term deleterious effects for many species by creating small closed canopy, sub-optimal habitats, and creating pockets of dense fuels that can burn hot and adversely affect populations during wildland fires.

Broadcast burning, manual thinning, hand-piling, and pile burning used to reduce shrub and tree densities and restore grasslands, chaparral and oak woodlands could adversely affect individual plants and small populations of special status plants. Individual plants can be directly affected from trampling by hand crews during thinning and fuel reduction projects, and from the piling slash on plants. In addition, pile burning can bake the roots and bulbs of special status plants.

Prescribed fire could have short-term adverse affects to individuals and localized populations (especially vascular plants) if burning is done during the growing season (spring). Broadcast burning can directly kill growing plants, reduce annual reproduction, and reduce population size in the short term. Over the long term, the habitat resulting from a thinning or burning activity can provide better growing conditions for special status species through increased light and moisture, and reduced fuel loads, if plants survive or can re-colonize from adjacent occupied habitat.

Reducing the risk of high severity wildland fire by reducing shrub and tree densities and opening canopy cover can provide indirect beneficial effects by restoring, maintaining, and creating suitable habitat for many special status plants associated with these diverse communities. Indirect effects from these treatments include a potential increase in noxious weeds which can compete with special status plants for water, space, and nutrients.

The federally listed plant Gentner's fritillary occurs in the DEA. The U.S. Fish and Wildlife Service programmatic biological opinion describes specific conservation measures for activities and future actions in the DEA (Appendix D). Management activities proposed for the DEA are not likely to have an adverse affect on these populations.

Management of Riparian Areas and Aquatic Resources

A number of special status plants occur in riparian areas, including seeps, and seasonally wet meadows. Most of the riparian objectives involve restoration or enhancement activities for aquatic systems. Direct effects to special status plants would only occur in areas where equipment would disturb or unearth intact special status plant habitat during watershed restoration activities. Individual plants could be crushed by equipment, or excavated while moving soil to restore aquatic function. Fencing wetlands, seeps, and spring areas to exclude livestock would likely provide a beneficial effect to existing special status plants.

Weed Management

Treating noxious weeds can result in direct effects to individual special status plants. For example, manual treatments (hand-pulling) can result in trampling of individual plants by work crews during the growing season. Herbicide spot spraying can result in adjacent special status plants being inadvertently sprayed (drift), resulting in effects to special status plants. The wicking or wiping of individual weeds is not likely to affect special status plants due to direct application.

The hot foam method is used on individual weed plants, usually in the rosette stage. The hot steam (212 degrees) can kill individual special status plants if treated, but pre-disturbance surveys for special status plants will identify plants to be protected. Weed treatments using prescribed fire in the late spring through summer could kill special status plants; however, the lack of prescribed fire could also pose an increased fire risk that may eliminate special status plants if a wildland fire were to occur.

Roadways and other disturbed areas (landing, recreation sites, etc.) that have a reduced potential to support special status plants are target areas for weed treatments. Treatments in these areas are not likely to have a direct affect on special status plants. Treatments in intact environments such as oak woodlands, grasslands, and chaparral can affect individuals and localized portions of populations.

The indirect effects from weed treatments can be beneficial to neutral, as decreasing the competition from noxious weeds could benefit special status plants. Sowing native grasses can fill the niche left from weeds, and these native species (bunch grasses and forbs) are not likely to compete with special status plants.

Pre-treatment surveys, and using wicking and wiping methods within special status plant populations would reduce adverse effects. The monument's noxious weed strategy would indirectly benefit special status species by reducing noxious weeds that compete with special status plants.

Transportation and Access

Decommissioning road work, if kept within the previously disturbed road prism, should have little effect on special status plants. Using native grasses and forbs following mechanical decommissioning should not affect special status plants. Under some circumstances, however, such as culvert removals, road obliteration, or unstable, erosive road segments, disturbance from decommissioning could occur outside of the road prism into intact special status plant habitat. Some individual plants or localized portions of populations could therefore be affected.

Road closures would have no adverse effects to existing special status plant populations. The reduced vehicle traffic would decrease the potential to introduce or spread noxious weeds that can compete with special status plants. Access for vegetation treatments that could benefit special status plants would be more limited, but not eliminated.

New road construction would only occur under limited circumstances. Road construction activities could directly affect special status plants through the use of equipment and permanent habitat modification. Ground disturbance from road construction can introduce noxious weeds into new areas where weeds may then compete with special status plants. Re-opening decommissioned roads for fire suppression could have minor effects on special status plants, especially if they have colonized the edges of the road prism.

Off-road vehicle use seems to be increasing, even though OHVs are allowed only on open roads in the monument. Some unauthorized "cross county" use has and is likely to continue to occur. Special status plants can be crushed under the wheels of OHVs, and the ground disturbance can facilitate weed movement and introduction. However, the scale of the use is small so that the likelihood and scope of the effects is not large. Law enforcement and a future monument strategy for OHV use on existing roads would help alleviate this unauthorized use and reduce any further effects.

Pre-disturbance surveys, documentation of populations, and implementation of site-specific conservation measures during project planning and implementation would reduce or eliminate adverse affects.

Recreation and Visitor Services

Direct effects from recreation use in the monument are mostly from incidental trampling of individual plants. Hiking, camping, horseback riding, and wildflower viewing can affect incidental special status plants, although the magnitude of affect is likely very low. Some isolated special status plants in close proximity to existing trails, or at other 'destination' sites or viewpoints could be affected. Indirectly, heavy recreation use can disturb the soil and facilitate the spread of noxious weeds, which could affect special status plants. Indirect effects from public education about special status plants are likely to be beneficial; increasing the level of awareness with the public about rare plants could reduce subsequent direct effects.

Levels of visitor use and recreational activities would be monitored throughout the CSNM. Recreational uses found to cause unacceptable resource damage would be limited or prohibited. New trail or facility construction would trigger site-specific surveys and protection of any special status plant sites.

Livestock Operations

Livestock operations can have a range of effects on special status plants, depending on the timing of release, grazing intensity, utilization patterns, palatability, and inherent response by the plants to herbivory. Direct effects from physical disturbance from trampling and grazing can adversely affect individuals and localized populations of special status plants annually. The grazing of flowers and developing seed-heads of special status plants can reduce annual reproduction, and, over the long term, can reduce population sizes.

Indirect effects include soil disturbance from trampling. The congregation of cattle can result in increased levels of introduced and weedy species, including annual grasses. Heavy grazing can result in changes in the composition, structure, and function of habitats containing rare plants, especially riparian zones, vernal pools/wet meadows, grasslands, and oak woodlands. Heavy utilization in riparian plant communities that could contain riparian and meadow special status plants has been documented (see riparian management concerns). Many utilized areas within the monument have not been surveyed for special status plants.

Grazing is not uniform throughout the monument and most of the areas of higher utilization occur within the DEA in close proximity to grassland meadows, road flats, and water sources. Documented special status plant sites occur both in areas of high and low utilization. There is little specific information regarding the direct and indirect effects of existing grazing on most special status plants in the monument, mainly because of limited monitoring. Some effects to individuals and localized populations are likely occurring, but the extent and significance is not fully known (see grazing management concerns).

Some of the special status plants that are early spring species (e.g., *Plagiobothrys* species) are likely to have nearly completed their life cycle prior to the annual release of the cattle. Other special status plant species are likely not palatable or are poisonous. Some species such as the lilies and fritillaries are known to be palatable by other ungulates. Other special status plant communities of concern are in seasonally wet meadows and riparian areas that have few populations with few individuals and that are therefore inherently vulnerable to impacts.

The CSNM livestock grazing study is examining the effects of grazing on a number of the objects of biological interest, including the sensitive species Green's mariposa lily and Gentner's fritillary. The future completion of rangeland health assessments and the determination of rangeland health will also address special status plant species. The Medford programmatic biological opinion for Gentner's fritillary (USDI 2003) requires surveys in suitable habitat prior to lease renewals; moreover, specific conservation measures are listed to protect existing sites from grazing. These surveys will provide information for many other special status plants species as well.

Wildland Fire Suppression

Wildland fire suppression under the existing agreement with the Oregon State Department of Forestry in the monument has the potential to exert some direct adverse effects on special status plants in the monument, if populations exist in project areas.

Direct effects from line construction with machines (bull-dozers), equipment, or by hand can smash or dig up individual plants and small localized populations, especially sites along ridgelines. Backfires can burn through occupied habitat, although this can have a range of effects depending on the season and fuel loads. The compaction of soil from heavy equipment can affect suitability of special status plant habitat. Equipment and soil disturbance can facilitate the spread of noxious weeds. The construction of emergency helispots can also affect small areas of suitable habitat for special status plants, especially on open ridge lines. Fertilizer-based fire retardant can effect short-term changes to nutrient levels, especially for species adapted to nutrient limited sites (e.g., shallow soiled and rocky areas along ridge-lines). While most plants benefit from increased nutrient input, some species can experience stress, or be out-competed by other species that can better utilize excess nutrient input (e.g., weeds). Current fire suppression tactics within the monument allow engines and other equipment off road, although efforts to minimize crossings of stream, seeps and springs are mandated. Localized effects on existing special status plants from equipment could occur.

At the landscape level, suppressing fires would provide immediate direct protection of occupied special status plant habitat, especially in grasslands, chaparral, mixed evergreen/oak wood lands, and later successional conifer stands. Indirectly, the exclusion of fire in many of these communities that support special status plants will adversely affect populations through time. Increased canopy cover (shrubs and trees), decreased light and moisture can reduce the reproducing population size of many special status plants, and allow succession to reduce suitable habitat. Some other special status plant species, adapted to later successional conifer communities may benefit from a later successional condition, depending on the potential of the site.

Current suppression tactics will continue to affect plants. Large fire events more severe than recent historical fires are likely inevitable and will affect special status plants.

Many of the lands in the monument have not had formal special status plant surveys; highly suitable un-surveyed habitat exists. All known special status plant sites are mapped and available to wildfire resource advisors in order to minimize effects to special status plants sites, including the location of the federally listed *Fritillaria gentneri*. By law (Endangered Species Act, 1973, as amended), emergency consultation with the U.S. Fish and Wildlife Service (USFWS) is required if emergency situations, including restoration, threaten or affect this species.

Collections/Special Forest Products

There are no direct or indirect effects from the collection of plants and plant parts as this is not an authorized activity within the monument. Although personal collection and wildflower ‘picking’ of special status plants is prohibited, the effects of any incidental ‘collection’ is likely insignificant. The collection of BLM special status species for research purposes could be authorized under permit within the monument. Any requests for research permits would be strictly controlled and would not have any significant effects to special status plant populations.

The Endangered Species Act prohibits the collection of any federally listed plant (i.e. Gentner’s fritillary) without a permit from the USFWS, and usually only for approved scientific research purposes. Recovery actions outlined in the 2003 USFWS *Fritillaria gentneri* recovery plan will likely occur over the next few years, increasing population sizes by bulblet collection, greenhouse propagation, and out-planting. These actions in partnership with and authorized by the US Fish and Wildlife Service will benefit the species.

Utility Rights-of-Way and Road Rights-of-Way

The construction of new utility rights-of-way and road rights-of-way would be minimal. Where authorizations are granted for these activities, surveys would be completed to determine the presence of special status species in the area. If special status species are discovered, the activity would generally be moved to another site. In cases where these activities occur in the vicinity of special status species, direct effects could result from the use of construction equipment and habitat modification. Indirect effects from new noxious weed invasions following ground disturbance and equipment could affect nearby populations of special status species, but noxious weed control measures will reduce these effects.

Past activities have likely adversely affected or eliminated special status plant populations at communication sites, and along utility rights-of-way corridors. These features have also facilitated the spread of weeds throughout the monument. Future actions, such as implementation of the noxious weed strategy should reduce weed populations and reverse this trend. Renewals of existing grants for communication sites and rights-of-way would address special status species and protect populations. Pre-disturbance surveys and protection for special status species prior to the construction of any new rights-of-way will reduce adverse effects on special status plants.

Inventory, Monitoring, Research and Adaptive Management

Inventory, monitoring, research and adaptive management would be inclusive of special status plants. Vegetation inventory, including rare plant surveys, will document new sites of special status plants. Monitoring of vegetation trends, or the effects of actions on plant communities, including the effects to special status plants, would provide information to ensure the continued viability of these rare elements, following an adaptive management strategy. Research activities would not likely have any adverse effects to special status populations. Research, including the collection of special status plant parts or individual specimens would not have adverse effects to the populations as a whole.

Wilderness Study Area Protection

Protection of the WSA will have no immediate affect to special status plants. Indirect effects from the continual build up of chaparral fuels and continued fire exclusion, slowly increases the risk of a high severity wildland fire, which could affect special status plants.

Effects on Recreational Use

INTRODUCTION

The area now known as the Cascade-Siskiyou National Monument has long been popular for a wide variety of recreational activities. Recreational activities in the monument include camping, hunting, hiking, horseback riding, sightseeing, fishing, cross-country skiing, snowmobiling, pleasure driving, rock climbing, and nature study. Visitor use in the area varies depending on weather conditions, with the highest use generally occurring in mid-summer to late fall.

The BLM provides one developed recreation facility (Hyatt Lake Recreation Area) located in the north management zone of the monument. It is a 474-acre lakeside facility offering developed campsites in two campgrounds with boat launching facilities, as well as day-use areas and group shelters. This site also serves as a staging area for winter recreation in the north management zone. Many visitors to the monument camp in dispersed, historic campsites in both the north and south management zones. The Pacific Crest National Scenic Trail traverses the landscape of the monument and provides hiking opportunities at multiple locations.

SUMMARY OF EFFECTS

The proposed monument management plan seeks to accommodate existing and future uses in a manner that balances recreation with the protection of monument resources and natural ecosystem processes. Therefore, a variety of recreational opportunities would be available within the monument. Some popular recreational activities, such as rock collecting and cross-country vehicle travel, were eliminated as a direct result of the presidential proclamation. Further direct impacts to recreational use as a result of the proposed plan would result primarily from the closure of areas to certain types of use (e.g., seasonal climbing restrictions at Pilot Rock), and increased limitations on mechanized and motorized vehicular access through road closures and road decommissioning. Similarly, some historic camping areas may be closed in order to protect monument resources. These may be closed on a temporary or permanent basis and/or designated as dispersed campsites. Group size restrictions on camping in the south management zone limit the number of people within that zone to 12, but would also promote more primitive experiences

Future recreational activities may be affected through temporary or permanent restrictions in areas where resource degradation is occurring. In other areas, new trail construction designed to decrease resource degradation may enhance opportunities for recreation.

Managing recreation across the checkerboard ownership pattern of public and private land throughout the monument is complicated. In cases where the BLM is not able to obtain public easements on roads that access popular BLM sites, the road owner(s) could limit access to these sites, thereby affecting certain recreational experiences.

DIRECT AND INDIRECT EFFECTS OF PROPOSED ACTION

OGEA Management

Proposed management in the OGEA is designed to maintain, protect, and restore conditions of late-successional and old-growth forest ecosystems in order to promote habitat and enhance connectivity for old-growth associated species. The primary management activities would include thinning and prescribed fire. Direct effects of management operations may include limiting visitor access to areas at the time of the operations due to smoke and other hazards. Short-term indirect impacts in the form of fire scars and debris could reduce the aesthetic quality and overall recreation experience. Educational and interpretive displays would be used to educate the public regarding restoration projects in the OGEA. Over the long term, the quality of the recreational experience should increase for those seeking to visit forests with late-successional characteristics.

DEA Management

The DEA is comprised of hardwood, shrub, grass, semi-wet meadow, and wet meadow plant communities. Proposed management in the DEA includes pilot studies in fire-dependent plant communities. Fire-dependent plant communities in the DEA are primarily categorized as grasslands, shrublands, and woodlands. Pilot studies designed to test vegetation restoration methods in fire-dependent plant communities would be limited to 10 acres in size per study with the exception of treatments involving broadcast burning, which would be limited to 100 acres in size.

These operations may directly impact recreation by limiting access to areas at the time of these activities due to hazards such as falling material, smoke, and other dangers. Short-term indirect impacts in the form of machinery, fire scars and debris could reduce the aesthetic quality and overall recreational experience. Where appropriate, educational and interpretive displays would be used to educate the public regarding restoration projects in the DEA. Over the long term, the quality of the recreational experience should increase for those seeking to enjoy the monument's ecological diversity, as these treatments would be designed to promote a natural range of native plant communities. Treatments could also increase the amount of game available for hunting as wildlife habitat improves.

Management of Riparian Areas and Aquatic Resources

This plan proposes the following treatments in riparian reserves: survey and/or inventory, planting and seeding of native species, thinning, reducing road density, fencing, and livestock management. These treatments may affect recreational use during and following treatments in riparian areas through temporary or permanent closures of these areas. Restoration of riparian areas would indirectly affect recreational use of the monument by providing a more pristine experience. However, restrictions on recreational use in these areas due to resource concerns may also limit access, reducing the opportunity for visitation.

Weed Management

The treatment of noxious weeds would have limited effects on existing recreational uses. Weed treatments generally take place in the spring before summer peaks in visitation and recreation take place. Approximately 2,000 acres are treated annually. These operations may impact recreation by limiting access to areas at the time of operations due to hazards. The use of prescribed fire would have short-term impacts on visitor experience such as reduced visibility and lack of ground vegetation. Visitors may also be excluded from treated areas for a period of time in order to ensure visitor safety as well as the success of weed removal and the re-establishment of native plant species.

Transportation and Access

The proposed plan would have limited effects on existing transportation and access for recreation and visitation. The presidential proclamation restricted motorized and mechanized travel to designated open roads. This plan proposes to decommission approximately 53 miles of currently closed roads, and to maintain closures on approximately 21 miles of road (Map 18) that were previously closed during interim management in order to comply with the proclamation and protect monument resources. Mechanical decommissioning, including culvert removal, could indirectly limit foot and horse access in these areas by making passage difficult.

Visitors looking for a more primitive experience, away from vehicles, would find opportunity throughout the monument. Hunting opportunities would improve for hunters seeking a non-mechanized hunting experience. Unauthorized vehicle travel off of designated routes could have a negative effect on these experiences. Law enforcement should help limit the occurrence of unauthorized motorized or mechanized access.

Recreation and Visitor Services

Each of the management zones provides different types of visitor experiences as described in the Management Zones and Areas section of Chapter 2. An extensive road system makes the north zone (Map 3) easily accessible and well-suited for visitation. The Hyatt Lake Recreation Complex is located in this zone. Due to higher elevations resulting in greater snow depths, multiple-use winter recreation primarily takes place in this north zone.

The south zone (Map 3) is primarily rugged and undeveloped. This remote area offers excellent opportunities for exploration and discovery. Group size restrictions of 12 people per group would limit the number of large groups in this zone, but selfdirected primitive experiences would be enhanced by these restrictions. Monitoring and adaptive management would ensure that the primitive quality of the recreational experience in this zone would be maintained.

The Pacific Crest National Scenic Trail (PCT) meanders through both the north and south management zones for over 16 miles. A 500-foot, no-cut corridor centered on the trail would help retain a quality visitor experience when management activities are taking place in this vicinity.

Technical climbing takes place on the south and east face of Pilot Rock. Seven recorded technical routes currently exist. New fixed anchors could be established on a limited basis to the extent that they do not detract from the geologic resource or impair the quality of the current climbing experience. To protect peregrine falcons and to help ensure nest productivity, a seasonal climbing closure from February 1 to July 30 would significantly limit climbing activities during the heaviest use periods on the south and east sides of Pilot Rock.

Currently, hikers access Pilot Rock on an unstable trail traversing the ridge west of Pilot Rock before continuing up a chute on the north side of the rock. The PCT travels through the upper Pilot Rock parking area and is often adversely impacted by vehicles traveling over and blocking the trail. The planned improvements to the Pilot Rock trail and parking area would increase the length and the condition of the trail, while reducing resource degradation and enhancing opportunities for recreation with a more natural setting. The seasonal restrictions that apply to climbing would not apply to hiking as long as hiking is determined not to have a negative impact on the falcons.

Limiting vehicle access to some areas of the monument would result in a more primitive recreational experience. The amount of human disturbance to wildlife would be decreased, while the level of solitude experienced by visitors would be increased. The overall experience for hunting and wildlife viewing may also be enhanced by the possible boost in wildlife numbers from decreased human-animal contacts.

As part of the monument's visitor services and interpretation program, improvements and alterations of existing facilities would take place. Existing trailheads, parking areas, and toilet facilities would also continue to be maintained. Additional toilets would be provided, as necessary, at designated trailheads and parking areas to reduce impacts to monument resources.

Livestock Operations

Livestock grazing has continued as an authorized use since monument designation. Livestock grazing has the potential to affect recreational use directly by contaminating water sources and by altering vegetation. Additionally, although some visitors may enjoy viewing livestock and livestock operations in the monument, others may find their presence an aesthetic and physical intrusion. The presidential proclamation mandated a study of "*the impacts of livestock on the objects of biological interest in the monument with specific attention to sustaining the natural ecosystem dynamics.*" Pending the outcome of the Livestock Impact Study, livestock grazing uses within the monument would be managed in keeping with applicable laws and regulations including the Oregon Standards and Guidelines for Rangeland Health. Following the completion of the Livestock Impact Study, any changes made to livestock operations in order to protect monument resources may have a positive impact on recreational activities.

Wildland Fire Suppression

Visitors to the monument are subject to regulations and temporary use closures set by the Oregon Department of Forestry during fire seasons. While the effects of smoke on visitor experiences would be temporary, visual effects of wildland fires would occur. Visitors may also be excluded from burned areas for a period of time to facilitate the re-establishment of native plants species.

Collections/Special Forest Products

The area that is now the monument has been a popular place for the collection of rocks (especially agates), mushrooms, berries, Christmas trees, and other vegetative forest products. The presidential proclamation prohibits the removal of monument features. Removal of features includes, but is not limited to, the collection of rocks, petrified wood, fossils, archeological and cultural items, fish, plants, and animals. The collection of one gallon of vegetative forest products such as berries and mushrooms for non-commercial use would be allowed to continue. Commercial collections of all forest products would be prohibited. These restrictions would not affect hunting and fishing activities which are regulated by the Oregon Department of Fish and Wildlife.

Inventory, Monitoring, Research, and Adaptive Management

Monitoring of visitor use would increase the knowledge of visitor use patterns, as well as impacts created by recreational use. These studies may indicate where and when use patterns are shifting. Monitoring of resources throughout the monument may also indicate that impacts from visitor and recreational use are occurring. The outcome of some studies or monitoring may lead to restrictions on visitor numbers in a particular area(s) in order to protect monument resources and the overall quality of the recreational experience. Seasonal restrictions, physical barriers, interpretive displays and educational material may also be used to reduce impacts to sensitive resources. The adaptive management framework (Appendix C), in conjunction with the management objectives, tools, and implementation considerations described in Chapter 2 would provide the mechanism for changes in management based on new data being gathered.

PROPOSED ACTIONS WITH NO REASONABLY FORESEEABLE EFFECTS

No reasonably foreseeable effects on recreational use would be expected from proposed decisions listed under the following sections of this plan: *Utility Rights-of-Way and Road Rights-of-Way, Wilderness Study Area Protection.*

Effects On Livestock Operations

INTRODUCTION

There are nine grazing allotments throughout the monument, two of which are currently vacant. Although grazing seasons vary by allotment, grazing generally occurs from May through October. The presidential proclamation mandated that "Existing authorized permits or leases may continue with the appropriate terms and conditions under existing laws and regulations." Livestock is managed through authorized grazing leases; terms and conditions in these leases guide grazing activities.

SUMMARY OF EFFECTS

The proclamation mandated a study of "the impacts of livestock on the objects of biological interest in the monument with specific attention to sustaining the natural ecosystem dynamics." In keeping with this mandate, a *Draft Study of Livestock Impacts on the Objects of Biological Interest* was published in April 2001. This plan defers decisions regarding livestock operations until completion of the Livestock Impact Study and the rangeland health assessments. Upon completion of the decision-making process described in the Livestock Grazing section in Chapter 2, three decisions could be made: (1) Continue existing livestock leases; (2) Modify existing livestock leases; or (3) Eliminate some or all livestock leases in the monument. The impacts to livestock operations from any one of these decisions will be analyzed in a subsequent site-specific analysis.

Throughout the monument, direct impacts to livestock operations from implementation of the proposed plan would be limited and would primarily result from management actions designed to protect monument resources. Proposed plan actions that have the potential to directly or indirectly affect livestock operations include proposed road closures, road decommissioning, vegetation management, and monitoring activities.

DIRECT AND INDIRECT EFFECTS OF PROPOSED ACTION

OGEA Management

Proposed management in the OGEA includes thinning, prescribed fire, and weed abatement. Approximately 5,640 acres would be thinned in the OGEA over the next decade. Thinning treatments in the OGEA are not expected to impact livestock operations. In most cases, livestock would not be excluded from these areas following thinning. Opening of areas through thinning would allow grass and forb species to increase, improving forage conditions within the OGEA. Approximately 3,700 acres would be underburned following thinning treatments over the next decade. Livestock may be excluded from those areas for a period of time after treatment to allow for the re-establishment of native plant species. The impacts of weed abatement on livestock operations are described in the weed management section below below.

DEA Management

The DEA is comprised of hardwood, shrub, grass, semi-wet meadow, and wet meadow plant communities. Proposed management in the DEA includes weed abatement, restoration and protection of riparian areas and wetland plant communities, and pilot studies in grasslands, shrublands, and woodlands. Pilot studies designed to test vegetation restoration methods, including prescribed fire, defoliation treatments, and thinning, would be limited to 10 acres in size per study with the exception of broadcast burning which would be limited to 100 acres per study. The increased diversity of native species in the pilot study areas may provide additional forage for livestock in these areas; however, livestock may be excluded from those areas for a period of time following treatment to ensure the success of the vegetative treatments. The impacts on livestock operations would be minimal as broadcast burning would be limited to 200 acres annually. The impacts on livestock operations from weed abatement and riparian area restoration are described in their respective sections, below.

Management of Riparian Areas and Aquatic Resources

The management of riparian areas has the potential to directly impact livestock operations. This plan proposes the following treatments in riparian areas: survey and/or inventory, planting and seeding of native species, thinning, reducing road density, fencing, and livestock management. Proposed livestock management techniques in accordance with existing laws and regulations may limit the amount of time livestock spend in riparian areas in order to reduce resource impacts. Where other management tools are not feasible, fencing may be used to exclude livestock from streams, springs, seeps, and wetlands where damage is occurring. Livestock may also be excluded from riparian areas for a period of time following planting and seeding of native species.

Weed Management

The removal of noxious weeds would increase forage in areas that were previously unpalatable to livestock. However, in order to ensure the success of weed removal and the re-establishment of native plant species, livestock may be excluded from some areas for a period of time following treatment. Due to funding constraints, the monument's weed abatement program is expected to treat approximately 2,000 acres a year. Livestock exclusion following treatments may only occur on some of these acres and would be done in coordination, cooperation, and consultation with livestock lessees and interested parties.

Transportation and Access

The type and availability of access are factors which affect the ability of livestock lessees to operate within the monument. Since monument designation, the BLM has authorized livestock operators to have vehicle and OHV access on otherwise closed roads in the Agate Flat area, portions of the Schoheim Road, Road 41-3E-9.0, Randcore Pass, and through the Box O Ranch (Map 17). Some of the roads currently used by livestock operators would be decommissioned (Map 18), reducing the number of roads available for livestock operations. Livestock operators would continue to have access on closed roads deemed necessary for the management of livestock operations.

Recreation and Visitor Services

Existing visitor site facilities (trailheads, parking areas, picnic areas, pullouts, dispersed camping, trails, etc.) could directly impact livestock operations through disruption of movement and/or grazing patterns. Recreational users could also leave gates open, resulting in unscheduled livestock distribution. This occurs primarily near the Hyatt Recreation Area. Additionally, use of sites by humans has the potential to degrade surrounding vegetation, allowing for erosion of soil and further degradation of vegetation/forage.

Livestock Operations

Livestock grazing continues as an authorized use in the monument and is managed under existing laws and regulations, including the Oregon Standards and Guidelines for Rangeland Health. Existing grazing leases authorize a total of 2,714 active AUMs. In 2003, livestock lessees used only 35 percent of the authorized AUMs.

The **Livestock Grazing** section in Chapter 2 describes the framework for making future livestock grazing decisions and complying with the presidential proclamation. This process would result in the evaluation of allotments, determinations of rangeland health and compatibility with "protecting the objects of biological interest", development of management alternatives for livestock grazing, and the selection and implementation of an alternative. Since this process is governed by existing laws and regulations, its impact on grazing management is not assessed in this plan; rather it would be assessed in subsequent NEPA analysis and under grazing regulations (43 CRF 4160).

This plan proposes a limited number of decisions regarding livestock operations in the monument. None of these decisions would directly affect existing operations as they are specific to new applications, leases and authorizations:

- Applications for new grazing leases on existing vacant allotments (Siskiyou and Agate) would not be approved until completion of the Livestock Impact Study and the evaluations, determinations, and NEPA process described above.
- New grazing leases or applications for

temporary grazing use within the monument would not be approved on lands not currently under a lease.

- Future grazing authorizations on newly acquired lands that were previously leased for livestock grazing must advance the purposes of the proclamation and assure consistency with the determinations from the Livestock Impact Study.

The proposed plan may indirectly affect livestock operators with current leases that wish to file applications to graze livestock in areas where they are not currently authorized.

Wildland Fire Suppression

In the event of a wildland fire, burned areas would be closed to livestock grazing for at least two growing seasons following the fire. This restriction would promote recovery of burned perennial plants, prevent noxious weeds or other non-native invasive species, reduce the risk of erosion and associated effects to riparian areas and stream systems, and protect monument resources and natural ecosystem processes. Adjustments to grazing use may be necessary following a wildland fire and could include temporary, full, or partial reductions of active authorized use. The BLM would consult, cooperate, and coordinate with the livestock grazing lessees for any adjustments to grazing use. An interdisciplinary evaluation is required at the end of the second growing season to determine whether additional livestock exclusion is required to meet rehabilitation objectives. Livestock closures for less than two growing seasons may be justified, on a case-by-case basis, based on sound resource data and experience.

Inventory, Monitoring, Research, and Adaptive Management

Monitoring activities associated with the Livestock Impact Study, adaptive management strategy, and rangeland health standards would continue in the monument. These activities are generally non-obtrusive and should not directly effect livestock operations. However, information derived from these activities may result in changes in grazing distribution, livestock use of a particular area, or access to water. These changes would likely take place in riparian areas where cattle are known to congregate. The BLM would consult, cooperate, and coordinate with the livestock grazing lessees as required in the grazing regulations when inventory, monitoring, or research activities may affect the grazing leases.

PROPOSED ACTIONS WITH NO REASONABLY FORESEEABLE EFFECTS

No reasonably foreseeable effects to livestock operations would be expected from proposed decisions listed under the following sections of this plan: *Collections/Special Forest Products, Utility and Road Rights-of-Way, Wilderness Study Area Protection.*

Effects on Air Quality

INTRODUCTION

The Clean Air Act requires each state to develop and implement a State Implementation Plan to ensure that National Ambient Air Quality Standards are attained and maintained for particulate matter (PM10). In Oregon, PM10 was identified by the State Implementation Plan as the basis for non-attainment within the Grants Pass and Ashland/Medford area. This area has been in attainment for at least six years.

Prescribed burning is the only management activity that has the potential to affect air quality. The focus of the analysis for the effects on air quality from prescribed burning is on the production of PM10 (particulate matter smaller than 10 microns). In the Medford District Proposed Resource Management Plan/FEIS (USDI 1994b) baseline emissions were established to measure the Medford District's progress towards meeting the 50 percent reduction of particulate matter emissions. This baseline of 20,000 tons per decade is used for this analysis.

SUMMARY OF EFFECTS

Under the proposed management plan, prescribed underburning and handpile burning could take place on up to 3,700 acres in the OGEA during the next decade. Broadcast burning could take place on up to 2,000 acres in the Diversity Emphasis Area (DEA) over the next decade. All prescribed burning would comply with the guidelines established by the Oregon Smoke Management Plan and the Visibility Protection Plan. Prescribed burning is not expected to affect visibility within the Crater Lake National and neighboring wilderness smoke sensitive Class I areas (Kalmiopsis and Mountain Lakes) during the visibility protection period (July 1 to September 15). Prescribed burning is not routinely conducted during this period, primarily due to the risk of wildland fire.

Emissions from prescribed burning are not expected to adversely effect annual PM10 attainment within the Grants Pass, Klamath Falls, and Medford/Ashland non-attainment areas. Any smoke intrusions into these areas from prescribed burning are anticipated to be light and of short duration.

Prescribed burning would be scheduled primarily during the period starting in January and ending in June. This time period minimizes the amount of smoke emissions by burning when duff and dead woody fuel have the highest moisture content, which reduces the amount of material actually burned. Broadcast burning, handpile burning, and underburning would also be planned during the winter and spring months to reduce damage to the site from high intensity burning and to facilitate control of the units being burned.

The greatest potential for smoke intrusions into the non-attainment areas would come from underburning activities. Current avoidance strategies for prescribed fire assume that smoke can be lifted from the project site and dispersed and diluted by transport winds. However, underburning requires a low intensity burn that would not have the energy to lift the smoke away from the project site. Smoke retained on site could be transported into portions of non-attainment areas if it is not dispersed and diluted by anticipated weather conditions. Localized concentration of smoke in rural areas away from non-attainment areas may occur during prescribed burning operations.

Effects on Local Economies

INTRODUCTION

Impacts to local economies result primarily from direct BLM spending and from spending by visitors. Overall, the economic impacts of this plan on local economies are expected to be minimal, but positive.

SUMMARY OF EFFECTS

Direct spending by BLM on management activities such as forest management could have some beneficial effects on local communities. Some of the primary mechanisms for accomplishing restoration projects in the Old-Growth Emphasis Area are service contracts, stewardship contracts, and in some cases, commercial timber sales. Local contractors may benefit from these activities. However, the limited scale of projects proposed over the next 10 years is not likely to have any long-term impacts on local economies.

Increased visitation to the monument is expected based on general trends in public land use, increased name recognition associated with monument status, and regional increases in population growth. Direct spending by visitors to the monument could benefit local businesses that specialize in visitor accommodations and services.

Local economies could also be affected by many factors that are not directly the result of BLM actions, but may be influenced by how the monument is managed. Some of these factors may have socio-economic impacts that are even larger than those associated with this plan. Private enterprises, local government, and others make decisions regarding infrastructure, business development, and service expansions. These decisions may result in significant economic impacts. For example, a decision made by a private business to open a lodging establishment could have the effect of capturing more visitor spending, employing more people, and generating higher tax revenues. Similarly, decisions made about restaurants, grocery stores, tour guides, and research projects are not decisions made by the BLM, but could impact local economies.
Many small rural communities in the western United States that have been supported by extractive industries or agriculture have experienced a transition toward greater reliance on tourism. This of course drives a different type of development in these communities, bringing in services that had not previously been present and changing the economies and character of these communities. Property values are often driven upward and greater demands are made on local governments to provide for the increased infrastructure and service needs. Adequate data does not exist to systematically evaluate or quantify these potential impacts to the area.

Issues Considered but not Analyzed in Detail

There are several factors that must be considered in all Environmental Impact Statements because of laws, regulations, and executive orders, but which are not necessarily analyzed in detail. They are discussed below.

EFFECTS ON AREAS OF CRITICAL ENVIRONMENTAL CONCERN

At the time of monument designation, the Pilot Rock and Jenny Creek Areas of Critical Environmental Concern (ACECs) were superceded by the monument designation. The monument designation provides equal or greater protection for these areas. Therefore, there would be no impact on the relevance and importance criteria for any ACEC.

EFFECTS ON ARCHAEOLOGICAL AND CULTURAL RESOURCES

Lands within the monument possess an extensive range of cultural and archaeological resources from Native American sites to national historic trails. Tribes such as the Takelma Indians, the Shasta Indians, and the Klamath Tribe all inhabited these lands. Traditional use areas, as well as archaeological sites reflecting tribal histories exist throughout the monument. The majority of the archaeological sites documented to date have been discovered close to travel routes due to accessibility. Numerous non-inventoried sites are expected to occur throughout the monument.

Damage, degradation and destruction of archaeological and cultural resources can result from surface disturbing activities such as vehicle, human, and livestock use; road maintenance; wildland fires; vegetative restoration methods; and some noxious weed treatments. Disturbances to known cultural and archaeological sites would be avoided. Surveys for cultural sites or archaeological resources would be conducted prior to ground disturbing activities. Minimal impacts are expected to these resources as new and existing sites would be protected from disturbance.

EFFECTS ON PRIME AND UNIQUE FARMLANDS

There are no prime or unique farmlands or farmland of statewide or local importance on public lands in the monument. None of the actions proposed in this plan would disturb farmlands. Therefore, impacts on prime and unique farmlands are not analyzed further in this Environmental Impact Statement.

EFFECTS ON FLOODPLAINS

This plan does not propose any projects or activities that would result in permanent fills or diversions in, or placement of, permanent facilities on special floodplain areas (as designated by the Federal Emergency Management Agency). Therefore, impacts on floodplains are not analyzed in detail.

EFFECTS ON OR FROM HAZARDOUS AND SOLID WASTES

No hazardous, toxic, or unapproved solid waste sites are known to occur on public lands in the monument. None of the actions, activities, and uses projected to occur with implementation of this plan would require the handling, storage, or release of large quantities of these wastes. Therefore, impacts on or from hazardous and solid wastes are not analyzed in detail.

EFFECTS ON NATIVE AMERICAN TRUST RIGHTS

Impacts on Native American Trust Rights are not analyzed in detail in this Environmental Impact Statement because no trust rights are associated with lands inside the monument.

EFFECTS ON ENVIRONMENTAL JUSTICE

Executive Order 12898 of February 11, 1994 as amended by Executive Order 12948 provides that "each federal agency make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health and environmental effects of its programs, policies, and activities on minority populations and low-income populations." Environmental Justice "is achieved when everyone, regardless of race, culture, or income, enjoys the same degree of protection from environmental and health hazards and equal access to a healthy environment in which to live, work, and play". (Whorton and Sohocki 1996) The management actions, directions and strategies in this proposed plan comply with Executive Order 12898 as amended and there will be no disproportionately high effects on minority or low-income populations as a result of the proposed management. Native American populations would not be disproportionately affected by decisions in this plan. Exceptions to restrictions on uses of plants, collection of natural resources, and access to certain locations would be granted for Native American traditional practices.

EFFECTS ON WILD AND SCENIC RIVERS

There are no wild and scenic rivers located on lands in the monument. None of the actions proposed in this plan would disturb wild and scenic rivers. Therefore, impacts on wild and scenic rivers are not analyzed further in this Environmental Impact Statement.

EFFECTS ON WILDERNESS OPPORTUNITIES

The Soda Mountain Wilderness Study Area (WSA) would continue to be managed under BLM's *Interim Management Policy for Lands under Wilderness Review*, H-8550-1 (USDI 1995b). Proposed management would not detract from the wilderness characteristics of this area or opportunities for solitude and primitive recreation. This plan proposes to decommission the Schoheim road and many other road segments adjacent or near the Soda Mountain WSA. This decrease in road density adjacent to the WSA would enhance the wilderness characteristics of the surrounding landscape.

IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

The irreversible commitment of resources refers to those impacts that cannot be reversed except, perhaps, in the extreme long term. The irretrievable commitment of resources refers to those resources that would be lost for a period of time.

The monument's landscape is dynamic in nature and will continue to change and develop regardless of specific management actions. Plan implementation is not likely to result in significant impacts that may be characterized as irreversible and irretrievable commitments. The overall integrity of the area and its ecological values would be retained.

Some small-scale disruptions to resources may occur, which may in turn prove long term or permanent. These are most likely to be associated with this plan's concentration of visitation in the North Management Zone, primarily in the Hyatt Lake area and along the Pacific Crest National Scenic Trail. Increased visitation to popular sites could yield irremediable impacts on resources such as soils and vegetation. Similarly, increased visitation could increase the risk of spreading noxious weeds and disrupt the habitat of certain species. Impacts would be monitored to determine the extent to which they may prove irreversible and irremediable, and adaptive management as described in Appendix C would be employed as appropriate.

Cumulative Effects

Cumulative effects are the effects on the environment resulting from the incremental impact of this plan in combination with other past, present, and reasonably foreseeable future actions outside the scope of this plan, either within the monument or outside of it. Cumulative effects are discussed because the quality of the human environment is the result of many different factors acting together. The real effect of any single action cannot be determined by considering that action in isolation, but must be determined by considering the likely effect of that action in conjunction with the effects of other actions. These involve determinations that are necessarily complex and, to some degree, intuitive.

Cumulative impacts on specific resources, local communities, and other users of the monument that result from BLM actions within the scope of this plan are included in each of the resource discussions above within the Summary of Effects sections. The cumulative effects discussion below considers this proposed plan in the context of the broader human environment.

CUMULATIVE EFFECTS OF PAST, PRESENT, AND REASONABLY FORESEEABLE FUTURE ACTIONS

The lands adjacent to the monument are a mixture of other federal lands managed by the BLM, lands managed by the State of California, and private lands. Management of BLM lands and state lands in California are not likely to have an adverse affect on monument resources. Before the monument designation, the Cascade Siskiyou Ecological Emphasis Area Draft Management Plan (USDI 2000) recognized the Horseshoe Ranch Wildlife Area in California as an important part of the natural processes in the Slide Creek, Scotch Creek, and Camp Creek subwatersheds. In order to coordinate management across state lines, a Memorandum of Understanding was established among the BLM's Medford District (Oregon), the Redding Field Office (California), and the California Department of Fish and Game in March of 2001.

Reasonably foreseeable future actions on BLM-administered lands within the cumulative effects analysis area, but outside the monument, include two landscape projects: (1) Plateau Thin in the Upper Jenny Creek Subwatershed; and (2) Sampson Cove in the Upper Emigrant Creek Subwatershed, tentatively scheduled for 2006 and 2008, respectively. These landscape projects would include forest thinning and prescribed fire treatments to improve forest health in addition to road renovation and decommissioning. No road construction is anticipated for either of these projects.

The largest impact to monument resources will be from actions taken on private land adjacent to the monument. Thirty-eight percent of the land within the monument's boundary is privately owned and consists of private residences, ranches, resorts, and timberlands. Actions on surrounding private land could continue to affect adversely monument resources.

New timber harvest activity on private industry forest lands is unlikely in the reasonably foreseeable future, since large portions of this forest land have been harvested over the last 10 years. Minimal new road construction is anticipated, with few exceptions, since the industrial forest lands and private residential inholdings have established road access. Herbicide treatments could occur on industrial forest lands to reduce competing vegetation for conifer production. Land clearing could continue, especially for residential developments along the Highway 66 corridor. Livestock grazing on private lands would likely continue at the existing levels. Water withdrawals would continue to reduce summer flows. Reservoir and hydroelectric operations, including associated interbasin transfers, would continue to affect flows in Keene, Jenny, Spring, Fall, Tyler, and Emigrant creeks. Restricted off-highway vehicle (OHV) use in the monument could lead to future increased use on private forest lands, especially during deer hunting season in the fall. Private lands can also have effects on visual resources in the vicinity of the monument, especially on the periphery of the monument where housing and other developments could alter the scenic quality.

Population growth is among the factors that would influence the monument environment in the long term. Population growth in the surrounding communities of the Rogue Valley is projected to increase by 30 percent over the next 20 years. Tourism in the region, including visitation to the monument and other public lands, is expected to continue to grow, which could add to the level of development beyond that attributable to population growth alone. Such development in the communities surrounding the monument could lead to more noise and visual impacts, as well as greater demands for water, all of which could impair the quality of the monument environment.

Water Resources

Water resource issues of concern in terms of cumulative effects include water quality, streamflow, and hydrologic function. The geographic scope for the water resources cumulative effects analysis includes all subwatersheds that fall partially or completely within the monument. These subwatersheds are listed in Table 2-7 and displayed on Map 13 of the Draft CSNM RMP/EIS.

Past and present human actions that likely influence water resources in the monument are described in the Hydrology and Water Quality sections of Chapter 2 in the Draft CSNM RMP/EIS. These actions include road construction; timber harvest; residential and agricultural land clearing; water withdrawals and augmentation; reservoirs; livestock grazing; and OHVs. The incremental effects of proposed activities in the monument would be negligible relative to the past levels of human-caused disturbance in the cumulative effects analysis area.

The cumulative effects of past, present, and reasonably foreseeable future management actions in the analysis area would likely result in a trend of improving water quality, especially water temperatures in small perennial tributaries due to revegetation of previously harvested riparian areas on federal lands, as well as implementation of water quality management plans for private lands. Water quality management plans developed by the Oregon Department of Environmental Quality would identify management necessary to meet water quality standards for all lands in the analysis area. Decreases in summer water temperatures for the 303(d) listed streams and other perennial mainstems in the monument would require major changes in management of riparian areas on private lands and would take many years to detect. High temperatures in all perennial streams affected by water withdrawals would likely persist.

Overall sediment production originating from BLM-administered lands in the analysis area would likely decrease over time with implementation of Best Management Practices (BMPs) and the Aquatic Conservation Strategy (ACS), which includes riparian reserves and watershed restoration. Watershed restoration projects such as the road drainage improvements and decommissioning proposed for the monument are essential for sediment reduction efforts from BLM-administered lands in the analysis area. The water quality management plans developed for the analysis area should identify restoration opportunities for sediment reduction on all lands. However, it is likely for the reasonably foreseeable future that fine sediment produced from private natural surfaced roads and those with inadequate drainage would continue to enter stream systems that flow through the monument.

Other activities that would likely continue to contribute to water quality degradation in the reasonably foreseeable future include: livestock grazing adjacent to streams and springs on both private and federal lands; OHV use on private lands, especially at natural stream crossings; private residential land clearing, particularly in riparian areas; and aerial spraying of pesticides on private timber lands.

Future proposed road drainage improvements and decommissioning on federal lands would reduce the influence of the road network on peak flows, especially in the Camp, Scotch, and Middle Cottonwood subwatersheds which would have the greatest decrease in road density. No road decommissioning is known to be planned for private lands. Future timber harvests on federal lands would likely maintain canopy closures that are already 30 percent in the transient snow zone. The average canopy closure on industrial forest lands is likely to be less than 30 percent for the foreseeable future. Cumulative effects of management actions on the timing and magnitude of peak flows would not likely result in a noticeable change. Low summer flows would likely remain unchanged with the implementation of the proposed monument plan.

There would likely be little to no change in the cumulative effects of the proposed actions in the monument with past, present, and other reasonably foreseeable future actions on hydrologic function. The proposed monument plan would, however, contribute toward hydrologic recovery as it attempts to restore ecological processes, although this would amount to a small percentage of the cumulative effects analysis area. It is unlikely that the hydrologic function in the cumulative effects analysis area would ever return to natural conditions. Proposed vegetative treatments in the monument would strive to attain historic conditions that would improve hydrologic function. Road drainage improvements and decommissioning proposed for the monument would also improve the hydrologic network..

Riparian-Wetland Areas and Aquatic Resources

As described earlier in the document, the monument has experienced numerous human-caused disturbances at many spatial and temporal scales. Fire suppression activities, timber harvest and road construction in riparian zones, livestock grazing, continued irrigation water withdrawals and rural residential development have all contributed to the degradation of aquatic habitat. The proposed plan would begin the gradual restoration of riparian-wetland conditions and aquatic habitat on federal lands.

Overall, the condition of aquatic habitat and aquatic populations on federal land would remain stable under this plan, with an increased emphasis on protection and potential for improvements. BMPs, ACS, and other restorative actions would further guide actions proposed in riparian areas. Proposed road decommissioning, for example, would improve aquatic connectivity and reduce sediment at the site-specific scale. Thinning of small diameter trees within some riparian areas is proposed to improve the growth rate of conifers for future large wood recruitment at a site-specific level; this may produce some site-specific improvements along the small headwater streams, benefiting aquatic insects, amphibians, or riparian flora and fauna. As trees respond to treatment, there should be some improvement in large wood recruitment. Over time, as these trees fall into streams, there could be an increase in pool frequency at individual sites. Although large wood placement may occur on the monument as a restoration measure, it is unlikely that increased large woody debris from federal lands will be enough to create channel complexity and restore the sediment regime at the subwatershed or monument scale.

If current trends continue on adjacent private lands, the affects to aquatic habitats could include (1) continued sediment input from roads and stream crossings; (2) loss of shade and increased stream temperatures as a result of harvesting near streams; and (3) further disruptions to aquatic connectivity. Sediment and temperature are discussed in the Water Resources section. Excess fine sediment in fish-bearing streams can eliminate aquatic insect habitat (food supplies), reduce the permeability of spawning gravels, fill pools and winter refugia, and block the interchange of subsurface and surface waters. Temperature is a limiting factor for many aquatic species, influencing their metabolism, migration, food availability, behavior, and mortality. A lack of connectivity would restrict migration and genetic exchange, reduce habitat availability, and impact nutrient cycling,

Water withdrawals improvements would be pursued but are expected to be limited, and would therefore continue to limit aquatic connectivity. Roads would also continue to limit aquatic connectivity on private and federal land.

In addition, livestock grazing in riparian areas within the greater monument boundary would continue to cause bank disturbance, increase fine sediment, and reduce streamside vegetation beyond what is optimal for fish and other aquatic organisms.

Gradual improvements to riparian areas on federal lands would improve aquatic habitat at those site specific levels but would not improve the conditions at the watershed scale. The treated riparian reserves are such a small portion of the landscape that at large scales (HUC-5 and HUC-6), there are no expected improvements to fish habitat condition or aquatic populations.

Old-Growth Emphasis Area

Few direct effects from management are expected at the landscape level for the first decade. Therefore, as most of the OGEA will remain untreated, few cumulative impacts will result at a landscape level. Furthermore, little impact is expected as a result of management adjacent to the monument. This is because forest structural characteristics change over time due to disturbance agents at the landscape level. Most of the future impacts to the monument landscape can be predicted based on current trends. Only where specific stands are managed will these general trends change. These will be highly localized and will result in few, if any, cumulative impacts of note at a landscape level.

Table 3-5 below outlines anticipated impacts from proposed management for treated stands (T) and untreated stands (UT). This table really represents the landscape level, as most of the OGEA will go unmanaged. Treated stands would show direct effects of management, while landscape level structural characteristics would continue to develop on the current trajectory, unless major disturbance events occur.

Table 3-5. Impacts at the Stand and Landscape Level

Forest Structural Characteristics	UT	T
Stand Density	I	D
Canopy Cover	I	I
Individual Tree Vigor	D	I
Average Tree size (Diameter and height)	D	I
Coarse Woody Debris Large > 16	U	I
Coarse Woody Debris Small < 16	I	D
Snags Large > 16	U	I
Snags Small < 16	I	D
Dwarf Mistletoe (not a disease that is considered a disturbance agent, but is important wildlife habitat)	I	U
Species Composition	**UT**	**T**
Ponderosa pine	D	I
Sugar pine	D	I
Douglas-fir	D	D
Incense cedar	U	U
White Fir	I	D
Hardwoods	I	D

I = Increase D = Decrease U = Unaffected

OGEA - Relative Trends for Disturbance Agents

Prior to 1900, the primary disturbance agents were wildland fires with some insect outbreaks and occasionally root rots and windthrow at higher elevations. Timber harvest has been the primary disturbance agent during the past century. At present the primary disturbance agent in the monument is insects. Timber harvest is still widely practiced on private ownerships adjacent to the monument. Assumptions made for disturbance agents' effects are based on the degree to which activities such as thinning and prescribed burning would occur. Stand structural characteristics change in response to disturbance agents and also determine to what extent a disturbance agent may alter stand development. For instance, lower densities in natural stands generally would result in lower levels of mortality due to beetles. In addition, species composition would determine the extent to which host specific root rots effect future stand development. Often beetle-pathogen interactions occur together and are affected by density and species composition. Fir engraver/root rot interactions are common in the CSNM, particularly in white fir plant communities and the more mesic higher elevation mixed conifer forest communities where white fir is found. Most of the assumptions pertain to mixed conifer because mixed conifer plant communities make up approximately ninety percent of the conifer forest types found in CSNM, while white fir accounts for about ten percent. Overall, few impacts will occur given the low level of management proposed over the next decade; disturbance agents will continue to have an increasingly negative impact to forests in the monument because they are not occurring at historic levels in forests with historic structural composition.

Small tree thinning and prescribed burning would be the primary management activities that would affect forest structure and species composition in the future. Generally, lower stand densities and larger tree size would accompany a shift away from small dense white fir toward larger ponderosa and sugar pine while maintaining other coniferous and hardwood species present. Thus the subsequent species shift would be toward historic compositions. Specifically, historic forest community attributes and current land designations would drive management decisions. Overall trends indicated in the table below are generally landscape level trends, but are sometimes applicable to actual individual stand treatments proposed. The limited management activities accomplished during the first decade would likely have little overall effect at the landscape level. Insect outbreaks and occasional stand replacement wildland fires would likely occur. Cumulative impacts to the OGEA would be negligible give the small area that is proposed for treatment.

Table 3-6 summarizes the affects of the proposed management plan on disturbance agent trends. Untreated (UT) is generally synonymous with landscape level effects, while Treated (T) represents managed areas that would be thinned and/or prescribed burned.

Diversity Emphasis Area

Fire exclusion and weed invasion associated with disturbance are the major factors resulting in change on the DEA landscape. Aerial photo comparisons (1939 versus 2001) indicate an increase in woody canopy over portions of the DEA within the CSNM and adjacent private lands. While this increase is not ubiquitous (certain plant communities were historically close-canopied and others remain unchanged), change has resulted in a loss of open habitat. Shrub stands of serviceberry and buckbrush show a decline in condition associated with fire exclusion. Shrubs with a majority of dead branches are a common observation throughout the monument. The fire-dependent nature of these shrubs and plant communities is also indicated by compositional changes identified as an increase in abundance of shrub species not dependent on fire for reproduction or rejuvenation (for example, Klamath plum). The accumulation of shrubs in areas of large hardwoods (Oregon white oak and California black oak) may result in local stand replacement fire and loss of certain plant community structural remnants of Native American management (ethnographic features).These trends will continue in the foreseeable future under current fire-fighting guidelines and the need to complete pilot studies before the implementation of larger-scale restoration efforts using prescribed fire.

While non-native annual grasses have declined in abundance at some study locations in the CSNM, other locations continue to show domination by cheatgrass and medusahead. Bulbous bluegrass (also a non-native) has increased in abundance from initial trial seedings and establishment as a forage plant following scarification projects on public lands within the DEA. Bulbous bluegrass can now be found in all plant communities (with the exception of white fir) and within the full elevational range of the CSNM and adjacent lands. Noxious weeds, in particular Canada thistle and yellow starthistle, have also increased on private and public lands. Spatial analysis indicates that these weeds are closely associated with disturbance in the form of high livestock utilization, road construction, and logging. While ongoing eradication efforts may reduce the abundance of

Table 3-6. Disturbance Agents – Trends Over Time

Disturbance Agent		UT	T
Laminated Root Rot	(*Phellinus weirii*)	I	D
Annosus Root Rot	(*Heterobasidion annosum*)	I	D
Shoestring Root Rot	(*Armellaria mellea*)	I	D
White Pine Blister Rust Not normally considered a disturbance agent, but listed here due to its impact on seedling and pole size sugar pine (i.e., young sugar pine are being lost from the stand and being replaced by white fir, Douglas-fir, and incense cedar in mixed conifer stands).	(*Cronartium ribicola*)	I	D
Fir Engraver	(*Scolytus ventalis*)	I	D
Western Pine Beetle	(*Dendroctonus brevicomis*)	I	D
Mountain Pine Beetle	(*Dendroctonus ponderosae*)	I	D
Wind (windthrow resulting in tree mortality)		I	D
Wildland fire (stand replacing events and tree mortality) With Prescribed Burning implemented		I	D

I = Increase D = Decrease U = Unaffected noxious weeds across the landscape, continued disturbance and the retention of a management infrastructure (roads and stockponds) implies that noxious weeds will continue to be a problem in the future. The current cycle of logging on private lands will increase the potential for weed outbreaks in the near future. Weed abundance in conifer plant communities and associated meadows will decline as tree canopy recovers over the next 10 to 20 years. Increased recreational pressure and road traffic will provide more opportunities for the introduction of new weeds. Recurrent outbreaks of weeds are thus expected to continue, especially within heavily grazed meadows along roadways, unless deeper rooted native grasses, forbs and shrubs are allowed to re-establish to capture problem areas and provide competition against weeds.

Special Status Plant Species

For special status plant species the cumulative effects from past, present, and reasonably foreseeable actions are varied across the landscape within the monument. Spatially and temporally, different actions have occurred, and the distribution of non-federal and federal lands (as well as special status plants) is not uniform. The primary issues that have influenced special status plant species populations and habitat on federal and non-federal lands have been ground disturbance from road construction, timber harvests, fire suppression activities, development (commercial, residential, or agricultural), and a long history of livestock grazing. The introduction of noxious weeds and the conversion of native perennial grasslands to non-native annual grasses have likely had an adverse effect on special status plants associated with those habitats. Fire suppression that has resulted in more dense plant communities (e.g., chaparral) has likely affected special status plant species better adapted to more open conditions, especially in areas in the DEA. Scarification, water diversions, range improvements (sowing non-native forage grasses), and noxious weed treatments have also likely affected special status plants and habitat in the past.

Prior to the development of federal special status species policies for federal lands in the 1970s, no surveys, mitigation, or management occurred for special status plants on federal lands in the monument. Ground disturbing actions from construction, development, resource extraction, and grazing (prior to this time on federal land) undoubtedly affected populations both directly and indirectly. Current policies on federal lands require the conservation of special status plants, which is accomplished by inventories and mitigation to reduce any adverse effects. Full protection of sites is sometimes warranted for certain species (especially listed species). State and federal laws and policies (e.g., Endangered Species Act) that conserve or protect rare plant populations do not apply to non-federal lands, unlike imperiled wildlife or fish. Current and recent ground disturbing actions (road building, timber harvest, grazing, and development) on private and corporate lands owners have likely affected remaining populations of special status plants.

The proposed and reasonably foreseeable actions on federal lands within the monument will likely result in an overall positive trend for special status plants. The monument proclamation recognized the plant diversity of the area, including special status plants, and the conservation and management of these rare elements is addressed in proposed actions. For instance, future thinning and fuels reduction projects should result in neutral to beneficial effects on special status plants. The effects of livestock grazing are being studied, and the viability of special status plant populations will be addressed for future proposed actions.

The trend of special status populations on non-federal lands are less certain, as no laws or policies address rare plants. Few inventories have occurred and distribution patterns can only be inferred from patterns on adjacent federal lands. Much of the adverse effects have already occurred from past activities on non-federal lands. For instance, new large-scale timber harvest on non-federal lands is unlikely to occur, as large portions have already been harvested. Any future conservation measures implemented by adjacent non-federal land owners for special status plant species would occur at the discretion of non-federal landowners. Any remaining special status plant populations on non-federal lands will likely continue to be subject to adverse effects from actions that cause ground disturbance such as development, herbicide spraying, road construction, grazing, OHV use, and timber management.

Overall, even with the likely loss of any remaining special status plant populations on non-federal lands, there is likely little change in the cumulative effects of the proposed action combined with past, present, and reasonably foreseeable future actions on both federal and non-federal lands. The trends for special status plants on federal lands are positive, and should off-set the losses from adjacent non-federal lands within the monument. In the future, larger special status plant populations on federal lands could serve as a source for re-colonization of suitable habitat on non-federal lands.

Terrestrial Wildlife

Wildlife species have been and will continue to be affected by most past, present, and future actions taking place within the boundaries of the monument and in the general vicinity of the monument.

Past, present, and future actions that have impacted wildlife populations in the monument include, but are not limited to, road construction, timber harvest, residential and agricultural land clearing, forest thinning, prescribed fire, fire suppression, herbicide treatments, animal control (e.g., gopher baiting), livestock grazing, water withdrawals, and OHV use.

Relatively little wildlife inventory work was done within the CSNM until the last two decades. This data provides a recent baseline with which to compare future wildlife population trends. There is little data available that allows comparison of present or future wildlife population trends with those of wildlife before European settlement and subsequent habitat modification.

It is likely that many terrestrial wildlife species have declined from historic levels due to habitat fragmentation, habitat alteration, and habitat removal over the last century or more. Most highly affected would be species with limited mobility (e.g., terrestrial mollusks), species with a highly specialized relationship to a specific habitat type (e.g., spotted frog), and species tied to a frequently modified habitat type (e.g., northern spotted owl).

Some wildlife species have experienced an expansion of available suitable habitat. This is especially true for species which prefer open areas (i.e., clearcuts or scarified shrublands).

Activities that appear neutral to a species may exhibit secondary impacts via direct impacts on another species. For example, through adverse impact to a prey species (e.g., pocket gophers, one action (e.g., gopher poisoning/trapping) may cause a reduction in predatory species population (e.g., great gray owls).

Some short-term negative impacts are likely, but unavoidable, in the course of returning a larger proportion of the CSNM to a natural historic condition. Short-term negative impacts from foreseeable actions include reduction in prey species populations through prescribed fire; loss of nesting habitat through forest thinning; and reduction of forage available to native herbivores through livestock grazing. Long-term negative impacts include loss of habitat for many species through continued and/or increased habitat altering activities on nearby private lands, and loss of existing habitat through plant community succession via fire suppression.

Positive impacts from foreseeable actions include increased foraging habitat and improvement of and increase in quantity of late-successional habitat through forest thinning and fuels reduction and improvement of aquatic and riparian habitats for amphibians and other wildlife species through implementation of BMPs, ACS, and other restorative actions.

Overall, cumulative effects to terrestrial wildlife species from proposed management activities should be largely positive in outcome, providing more and better quality habitats for many species. The scope of impacts from proposed management will be limited by the small area on which they are proposed to occur.

Landscape Connectivity

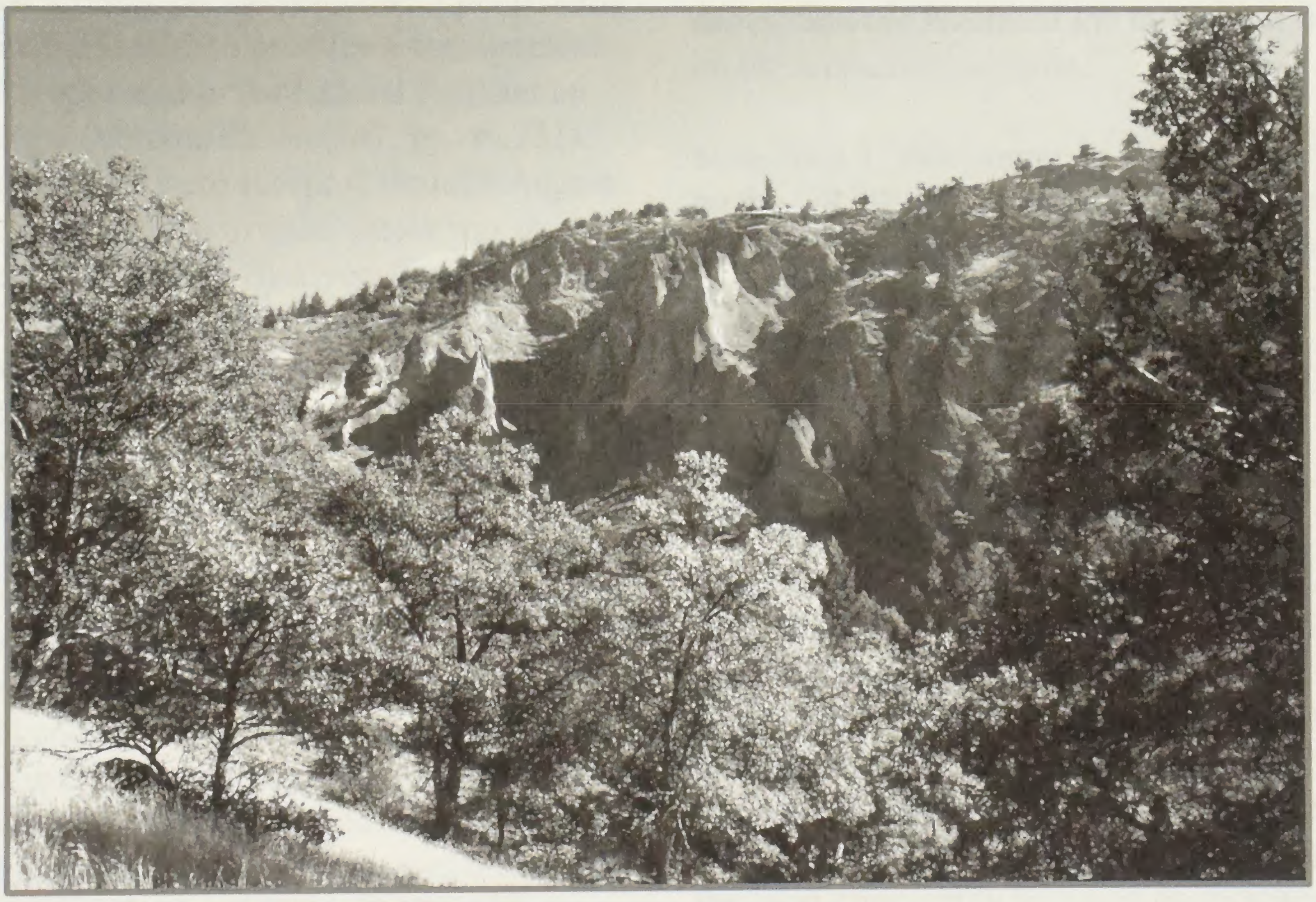
Prior to monument designation, approximately 32,952 acres of the CSNM were part of the Jenny Creek Late-Successional Reserve (LSR). Late-successional reserves were designated and are managed to protect and enhance conditions of late-successional and old-growth forest ecosystems, which serve as habitat for late-successional species including the northern spotted owl. These reserves were designed to maintain a functional, interacting, late-successional and old-growth forest ecosystem

(USDA/USDI 1994, page C-11). The Jenny Creek Late-Successional Reserve Assessment (USDI 2000) describes in detail the linkages between the Jenny Creek LSR (including the portion now within the CSNM) and neighboring LSRs.

The Jenny Creek LSR is located south of the Oregon South Cascades Dead Indian Plateau LSR, east of the Mount Ashland LSR, and north of the California Cascade Goosenest LSR. The US Fish and Wildlife Service designated Critical Habitat Units (CHUs) on federal lands throughout the range of the northern spotted owl after the species was listed as threatened (before the Northwest Forest Plan). The specific purpose of OR-38 was to provide genetic linkage between the Western Cascades and Klamath Province spotted owl populations through the Interstate 5 (I-5) Area of Concern. The Jenny Creek LSR lies on the eastern flank of the I-5 Area of Concern and overlaps much of the CHU OR-38 designated acreage.

Proposed treatments within the OGEA and DEA areas that are part of the previous Jenny Creek LSR and CHU OR-38 designations (Map 1-4 of the Jenny Creek LSR Assessment) are not expected to significantly affect the quality of habitat within these areas, nor affect the connectivity to the other LSRs outside the monument boundary. Proposed activities will likely result in localized improvements in habitat and ecosystem processes.

Chapter 4
Consultation and Coordination



CHAPTER 4
Consultation and Coordination

INTRODUCTION

The Bureau of Land Management (BLM) is committed to providing opportunities for meaningful participation in resource management planning processes. Effective planning processes provide opportunities for the public to become involved early, to comment on draft land use plans, and ensure that the BLM has met the provisions of the National Environmental Policy Act (NEPA). Since the Cascade-Siskiyou National Monument (CSNM) designation in June of 2000, the BLM has maintained an ongoing public participation process. These efforts are included below:

SCOPING

The formal scoping period began with publication of the Notice of Intent to produce a management plan, which appeared in the Federal Register on July 31, 2000 (Volume 65, No.147, pg. 46,731). Written comments were accepted through August 31, 2000. Although the original intent was to supplement the Cascade-Siskiyou Ecological Emphasis Area (CSEEA) Draft Management Plan/ Environmental Impact Statement (DMP/DEIS), it became clear that a stand- alone CSNM Resource Management Plan would better serve the planning process and the public.

During the scoping process, a letter inviting public input was sent to adjacent landowners and interested parties that announced the establishment of the monument and detailing the planning process. In addition, the CSNM web page provided up-to-date information on the monument and solicited public input. All relevant information received during the comment period for the CSEEA DMP/DEIS was incorporated into the planning process.

During the scoping period, 267 letters, cards and e-mails were received. Comments were received from 12 different states. Form letters or e-mails were submitted by many respondents (174) and three letters had petitions attached. During and after the scoping period, meetings were held with representatives of state and local governments (as well as other federal agencies) to discuss management of the monument.

DRAFT PLAN COMMENTS

In addition to printed copies, the draft plan was available for review through the CSNM's website and on CD-ROM (in an effort to reduce paper used in printing). The DEIS was sent to 11 elected officials, 21 federal agencies, 22 state and local governments, seven American Indian Tribes and Nations, three libraries, 44 organizations; approximately 300 CD-ROMs were made available upon request. A specific letter and copies of the draft plan were sent to the 400+ landowners adjacent to the monument. Due to the number of requests received, a 90-day extension of the comment period for the DRMP/DEIS was granted. A plan summary in the form of a "Reader's Guide" was developed and made available at key locations (Medford BLM front desk, CSNM Information center, and the Pinehurst Inn in Lincoln) and posted on the monument website.

More than 17,000 comment letters, faxes or e-mails on the DRMP/DEIS were received by December 19, 2002. The majority of comments were received as e-mail messages and followed consistent formats distributed by various organizations.

DRAFT PLAN BRIEFINGS/ OPEN-HOUSE SESSIONS

Two open-house sessions were held in May and December 2002, in Medford and Ashland (160 people attended). At the first session, an overview of the draft management plan was presented; this meeting was followed by a second open house to discuss and answer questions. In addition, specific issue-oriented meetings were held in the local community focusing on recreation and facilities, transportation planning and access, and vegetation treatments. From November 19 until December 17, 2002, monument staff were available every Tuesday at a local establishment to answer questions about the DRMP/DEIS. During the comment period 12 individual briefings were held for interested groups and local officials.

INTERNET HOMEPAGE

The BLM maintains a homepage at www.or.blm.gov/csnm that contains monument news and events, visitor information, and planning information. The homepage also provides an electronic link to planning information. The entire DEIS is available on the website in digital and down-loadable formats.

OTHER GOVERNMENTS

Upon release of the draft, the BLM contacted Native American tribal officials to answer any questions and to discuss the draft plan. This consultation effort will continue throughout the implementation of this plan.

COLLABORATIVE MANAGEMENT

The BLM recognizes that social, economic, and environmental issues cross land ownership lines. Extensive cooperation during the planning stage and beyond is also needed to address issues of mutual interest. In keeping with the concepts outlined in the Implementation, Monitoring, and Adaptive Management Framework section in Appendix C, the BLM would also engage in a collaborative management process that would seek to:

- Form innovative partnerships with local and state governments, Native American tribes, qualified organizations, and appropriate federal agencies to manage lands or programs for mutual benefit consistent with the goals and objectives of this management plan;
- Work with communities, counties, state and federal agencies, and interested organizations in seeking non-traditional sources of funding, including challenge cost-share programs, grants, in-kind contributions, and allowable fee systems to support specific projects needed to achieve plan objectives;
- Place greater emphasis, where appropriate, on contracting with private sector businesses, non-profit organizations, academic institutions, or state and local agencies to accomplish essential studies, monitoring, or project development;
- Increase the use of citizen and organizational volunteers to provide greater monitoring of resource conditions, and to complete on-the-ground developments for resource protection, effective land management, and human use and enjoyment.

Where it is found to be mutually advantageous, the BLM would enter into cooperative agreements or memoranda of understanding with federal, state, local, tribal, and private entities to manage lands or programs consistent with the goals and policies of this management plan. Such agreements could provide for the sharing of human or material resources, the management of specific tracts of lands for specific purposes, or the adjustment of management responsibilities on prescribed lands. This would be done in order to eliminate redundancy and reduce costs.

Non-profit organizations and citizens and user groups that have adequate resources and expertise could enter into cooperative agreements to assist in the management of public lands in the monument. Assistance could include, but would not be limited to, research, resource monitoring, site cleanups, and the construction of authorized projects.

PLANNING CONSISTENCY

The Federal Land Policy and Management Act (FLPMA), Title II, Section 202, provides guidance for the land-use planning system of the BLM to coordinate planning efforts with Native American tribes, other Federal departments, and agencies of the state and local governments. In order to accomplish this directive, the BLM is directed to: keep informed of state, local, and tribal plans; assure that consideration is given to such plans; and assist in resolving inconsistencies between such plans and federal planning. The section goes on to state in subsection c) (9) that "*Land use plans of the Secretary under this section shall be consistent with State and local plans to the maximum extent he finds consistent with Federal law and the purposes of this Act.*"

The provisions of this section of FLPMA are echoed in Section 1610.3 of the BLM Resource Management Planning regulations. In keeping with the provision of this section, state, local, and tribal officials were made aware of the planning process through the previously described mailings and meetings. Planning team members also met with local governments and maintained communications with tribal officials regarding the CSNM planning process.

According to Section 1610.4-7 of the Bureau of Land Management Resource Planning Regulations, the Draft CSNM Management Plan and Draft Environmental Impact Statement is provided to the Governor, other federal agencies, state and local governments, and Native American tribes for comment. The resulting comments will be addressed in the proposed management plan. The formal 60-day consistency review by the Governor will occur after the proposed management plan is published, as outlined in 1610.3-2(e) of the BLM Planning Regulations.

BLM planning regulations require that resource management plans (RMPs) be consistent with officially approved or adopted resource-related plans and the policies and procedures contained therein, of other federal agencies, state and local governments, and Native American tribes, "so long as the guidance and RMPs are also consistent with the purposes, policies and programs of federal laws and regulations applicable to public lands..." (43 CFR 1610.3-2). Consistency is construed as the absence of conflict. Based on BLM's knowledge of the plans of such other agencies, the FEIS has been compared for consistency to the following agencies' plans, and BLM has reached the conclusions stated.

Federal Agencies

Before the monument designation, the Cascade Siskiyou Ecological Emphasis Area Draft Management Plan (USDI 2000g) recognized the Horseshoe Ranch Wildlife Area in California as an important part of the natural processes in the Slide Creek, Scotch Creek, and Camp Creek subwatersheds. In order to coordinate management across state lines, a Memorandum of Understanding was established among the BLM's Medford District (Oregon), the Redding Field Office (California), and the California Department of Fish and Game in March of 2001.

This FEIS is believed to be consistent with the following plans of other federal agencies:

- *Final Supplemental Environmental Impact Statement on the Management of Habitat for Late-Successional and Old-Growth Forest Related Species Within the Range of the Northern Spotted Owl* (USDA/USDI, 1994) and subsequent amendments.
- The Forest Service's forest-wide land and resource management plans for the adjacent Rogue River (1990) and Klamath (1993) National Forest.
- The BLM's Klamath Falls Resource Area Resource Management Plan/EIS (1994).
- Natural Resource Conservation Service watershed plans.
- The Endangered Species Act and the following Fish and Wildlife Service plans:
  - Pacific Bald Eagle Recovery Plan
  - Northern Spotted Owl Recovery Plan
  - Fish and Wildlife Service determination of critical habitat for the Northern Spotted Owl
  - Peregrine Falcon Recovery Plan
- The Bonneville Power Administration's latest annual Transmission System Facilities Resource Program.
- The Northwest Power Planning Council, Columbia River Basin, Fish and Wildlife Program, and subordinate species-specific strategies.

State Government

The FEIS is believed to be consistent with the following plans, programs, and policies of the State of Oregon agencies, and in Table 4-1 that follows:

- Department of Environmental Quality
  - Smoke Management Plan
  - Visibility Protection Plan and Air Quality Policies
  - Prevention of Significant Deterioration Requirements
  - TMDL Implementation Plans
- Water Resources Department River Basin Programs for the Rogue and Klamath Rivers
- Water Resources Commission Rules and Statutes
- Department of Agriculture
  - Weed Control Plans
  - State-listed Endangered Plant Species
- Division of State Lands
  - Removal - Fill Law
  - Oregon Natural Heritage Program
- Parks and Recreation Department

- Statewide Comprehensive Outdoor Recreation Plan
  - State Parks and Recreation System Plan
  - State Recreation Trails Plan
  - State Historic Preservation Program
  - State Scenic Waterways Program and related projects
- Department of Transportation, Highway Division
  - Oregon Highway Plan
- Economic Development Department, Regional Economic Development Strategies

Local Government

The Oregon statewide planning program attached substantial importance to the coordination of federal plans with acknowledged local comprehensive plans. To the extent that BLM actions and programs are consistent with acknowledged county and city comprehensive plans and land use regulations, they can also be considered consistent with statewide planning goals. Local plans do not, however, address protection of Goal 5 values from the effects of forest management, as state law prohibits local government from regulating forest practices.

Table 4-1. Consistency of Plan with State of Oregon Plans

State Plan/Statute	Objective	Consistency of Alternatives
State Planning Goal 5	Open spaces, scenic and historical areas, and natural resources.	The proposed plan conforms with this goal in that priority is given to protection, maintenance, and restoration of the monument landscape.
Oregon Statutory Wildlife Policy, Revised Statute 496.012	Maintain all species of wildlife at optimum levels and prevent the serious depletion of any indigenous species. Develop and manage the lands and water of the state in a manner that will enhance the production and public enjoyment of wildlife.	The proposed plan would meet the objectives of this statute. There could be some short-term affects on population of species dependent on old-growth conifer forest, but in the long term these species would benefit from these alternatives.
	Develop and maintain public access to the lands and waters of the state and the wildlife resources thereon.	Some reductions in public access.
	Regulate wildlife populations and public enjoyment of wildlife in a manner that is compatible with primary uses of the lands and waters of the state and which provides optimum public recreational benefits.	The resulting habitat management will be conducive to most wildlife populations. The northern portion of the monument will benefit late-successional habitat dependent species and the southern portion will provide a diversity of habitat.
Oregon Threatened and Endangered Species Act	Protect and conserve wildlife species that are determined to be threatened or endangered.	All state species found within the monument are also federally listed under the Endangered Species Act.
Oregon's Sensitive Species Rule	Help prevent species from qualifying for listing as threatened or endangered.	Most species on Oregon's sensitive species list would be well protected.
Non-game wildlife	Plan to maintain populations of naturally occurring Oregon non-game wildlife at self-sustaining levels within natural geographic ranges in a manner that provides for optimum recreational, scientific and cultural benefits, and where possible, is consistent with primary uses of lands and waters of the State.	Most species on Oregon's non-game wildlife species would be well protected.

Table 4-1. Consistency of Plan with State of Oregon Plans

State Plan/Statute	Objective	Consistency of Alternatives
Big Game Population Management Objectives	Develop, restore and/or maintain big game (along with associated recreation, aesthetic, and commercial opportunities and benefits) at the level identified as the planning target level by game management unit. This is accomplished through hunting season regulation and implementation of multiple-use management practices on public lands; these practices tend to stabilize the cover-forage relationship in space and time, provide for wildlife emphasis in management of sensitive wintering areas, and offer habitat improvement opportunities.	The habitat for big game will be enhanced. This area complements the habitat provided in California by the Horseshoe Ranch Wildlife Habitat Area.
Wild Fish Policy	Protect and enhance wild stocks.	Protection of aquatic habitat for wild fish stocks will be a priority. The Aquatic Conservation Strategy provides for optimum protection of aquatic habitat.
Coho, Steelhead, and Trout Plans	Maintain and enhance production.	The Aquatic Conservation Strategy provides for optimum protection of aquatic habitat.
Basin Fish Management Plans	Establish compatible objectives for management of all fish stocks in each basin. Present tasks for attaining objectives, described unacceptable management strategies, and set priorities on achievement.	The Aquatic Conservation Strategy provides for optimum protection of aquatic habitat.
Oregon Forest Practices Act Rules	Establish minimum standards that encourage and enhance the growing and harvesting of trees while considering and protecting other environmental resources such as air, water, soil, and wildlife.	This plan would follow appropriate Best Management Practices as described in the Medford District Resource Management Plan. The Aquatic Conservation Strategy would provide minimum standards for all management activities. Harvesting of trees would only occur for restoration or enhancement of late-successional habitat.
Forestry Program for Oregon—Forest Use	Preserve the forest land base of Oregon. Stabilize the present commercial forest land base. Manage habitat based on sound research data and the recognition that forests are dynamic and most forest uses are compatible over time.	The proposed plan preserves the conifer forest land and minimizes the conversion of forest land to accommodate expansion of transportation, power, and communication facilities. Forest lands will be maintained in that capacity. All lands capable of sustaining coniferous forest would be managed toward providing late-successional habitat.
Forestry Program for Oregon—Timber Growth and Harvest	Promote the maximum level of sustainable timber growth and harvest on all forest lands available for timber production consistent with applicable laws and regulations, and taking into consideration landowner objectives.	All lands capable of sustaining coniferous forest would be managed toward providing late-successional habitat.

Table 4-1. Consistency of Plan with State of Oregon Plans

State Plan/Statute	Objective	Consistency of Alternatives
Forestry Program for Oregon - Recreation, Fish and Wildlife, Grazing, and other Forest Uses	Encourage appropriate opportunities for other forest uses, such as fish and wildlife habitat, grazing, recreation and scenic values on all forest lands, consistent with landowner objectives. A full range of recreational opportunities is encouraged. Where needed to reduce harassment and/or over-harvest of wildlife, road closure programs are supported. Integration of sound grazing management practices compatible with timber management goals and wildlife habitat goals is encouraged.	The proposed plan provides for other appropriate forest uses such as wildlife habitat, fish habitat, recreation, and collection of special forest products (i.e., personal use). Road closures in forest land base will be minimal as a result of reciprocal rights-of-way agreements with other landowners adjacent to the monument. Grazing will continue in the short term and will be re-evaluated in the future.
Forestry Program for Oregon - Forest Protection	Devise and use environmentally sound and economically efficient strategies to protect Oregon's forests from wildfire, insect, disease, and other damaging agents. Use integrated pest management. Employ cost-effective fire management policies that emphasize planned ignition fires over natural ignition fires and that consider impacts to the State's forest fire protection program.	The proposed plan provides economically efficient protection strategies while minimizing the disturbance to the landscape, particularly in the Soda Mountain Wilderness Study Area (WSA) and the Research Natural Areas. The use of integrated pest management strategies is incorporated. A fuel reduction strategy is proposed in the wildland-urban interface. Some road decommissioning in the southern portion of the monument may restrict access for fire suppression. Natural fire ignitions and prescribed natural fire will not be incorporated in this plan.
Statewide Planning Goals - Citizen Involvement	Develop a citizen involvement program that insures the opportunity for citizens to be involved in all phases of the planning process. Federal and other agencies shall coordinate their planning efforts with the affected government bodies and make use of existing local citizen involvement programs established by cities and counties.	BLM's land-use planning process provides for public input at various stages. Public input was specifically requested in developing issues. Public input will continue to be utilized in development of specific activity plans. Coordination with affected government agencies, including the ODF and ODF&W, has been ongoing and will continue. BLM has been working with Jackson County Commissioners to provide a linkage to their constituents.
Statewide Planning Goals - Land Use Planning	Establish a land use process and policy framework as a basis for all decisions related to use of land and to assure an adequate factual base for such decisions and actions.	The proposed plan been developed in accordance with the land use planning process authorized by the Federal Land Policy and Management Act of 1976, which provides a policy framework for all decisions and actions.
Statewide Planning Goals - Agricultural Lands	Preserve and maintain existing commercial agricultural lands for farming, consistent with existing and future needs for agricultural products, forest, and open space.	The proposed plan will not affect the use of lands for agricultural use.

Table 4-1. Consistency of Plan with State of Oregon Plans

State Plan/Statute	Objective	Consistency of Alternatives
Statewide Planning Goals - Open Spaces, Scenic and Historic Areas, and Natural Resources	Conserve open space and protect natural and scenic resources. Programs shall be provided that will (1) insure open space; (2) protect scenic and historic areas and natural resources for future generations; and (3) promote healthy and visually attractive environments in harmony with the natural landscape character. The location, quality, and quantity of the following resources shall be inventoried: 1. Land needed or desirable for open space; 2. Mineral and aggregate resources; 3. Energy sources; 4. Fish and wildlife areas and habitats; 5. Ecologically and scientifically significant natural area 6. Outstanding scenic views and sites; 7. Water areas, wetlands, watersheds, and ground water resources; 8. Wilderness areas; 9. Historic areas; 10. Cultural areas; 11. Potential and approved Oregon recreation trails; 12. Potential and approved Federal wild and scenic waterways and state scenic waterways.	Natural, historic, and visual resources were considered in the development of the proposed plan. The CSNM has been withdrawn from any forms of entry for mineral or resources. The proposed plan prioritizes the protection and maintenance of fish and wildlife habitat. Two ecologically and scientific significant Research Natural Areas were identified and management plans written (Appendices L and M), which are common to all alternatives. The entire monument viewshed is managed as VRM Class I or II. Watersheds, wetlands, and streams were identified and many have been inventoried for proper functioning condition. The Soda Mountain Wilderness Study Area is identified in the monument. Historic trails and significant cultural areas and sites have been identified and many have been inventoried. The Pacific Crest National Scenic Trail (PCT) traverses the western border of the CSNM. There are no wild and scenic waterways identified in the CSNM.
	Where no conflicting uses for such resources have been identified, such resources shall be managed to preserve their original character. Where conflicting uses have been identified, the economic, social, environmental, and energy consequences of the conflicting uses shall be determined and programs developed to achieve the goal.	There are few conflicts in the monument between preserving the resources or objects and uses. Access throughout the monument is one of the only identified conflicts, with priority in management toward limited access and more resource protection.

Table 4-1. Consistency of Plan with State of Oregon Plans

State Plan/Statute	Objective	Consistency of Alternatives
Statewide Planning Goals - Air, Water, and Land Resources Quality	Maintain and improve the quality of the air, water, and land resources of the state.	The federal and state water quality standards would be met and water quality would be maintained and/or improved. Burning of vegetation slash would have a slight temporary effect on air quality at the upper atmospheric levels. The proposed plan would comply with the statewide Smoke Management Plan and the State Implementation Plan.
Statewide Planning Goals - Areas subject to Natural Disaster and Hazards	Protect life and property from natural disaster and hazards.	Natural hazard areas—particularly floodplains—and areas with highly erosive soils have been identified. The proposed plan provides for appropriate management of natural hazard areas. Bureau-authorized development within natural areas would be minimal, with project construction engineering reflecting site-specific conditions and requirements.
Statewide Planning Goals - Recreational Needs	Satisfy the recreational needs of the citizens of the state and visitors and, where appropriate, provide for the siting of necessary recreational facilities, including destination resorts. Federal agency recreation plans shall be coordinated with local and regional recreational needs and plans.	BLM actively coordinates its outdoor recreation and land use planning efforts with those of other agencies to establish integrated management objectives on a regional basis. Under all alternatives, opportunities would be provided to meet recreation demand providing they are consistent with protecting monument objects, resources, or processes. The proposed plan would not meet the demand for off-highway vehicle use. The Hyatt Lake Recreational complex provides an array of recreational opportunities.
Statewide Planning Goals - Economy of the State	Diversify and improve the economy of the state.	There is some potential for an economic contribution from the fuels treatment and restoration efforts described in the proposed plan. Potential increases in visitor use could provide some economic opportunities and contribute to the economy of the state.
Statewide Planning Goals - Public Facilities and Services	Plan and develop a timely, orderly, and efficient arrangement of public facilities and services to serve as a framework for urban and rural development.	The proposed plan provides for limited improvements in public facilities.
Statewide Planning Goals - Transportation	Provide and encourage a safe, convenient and economical transportation system.	The proposed plan accommodates transportation needs for access across the monument. Roads in the southern portion of the monument would be closed and some decommissioned to enhance resource protection. Decommissioning the roads would limit vehicle access to some of the monument but does not inhibit valid existing rights.

Table 4-1. Consistency of Plan with State of Oregon Plans

State Plan/Statute	Objective	Consistency of Alternatives
Statewide Planning Goals - Energy Conservation	Conserve energy.	Conservation and efficient use of energy sources are objectives in all BLM activities.

FEIS Distribution List and Availability on the Internet

This Final Environmental Impact Statement (FEIS) is being made available to the following individuals, groups, and organizations. In addition, the final EIS will be available on the internet at <http://www.or.blm.gov/CSNM/>.

Elected Officials

Oregon

Senator Gordon Smith
U. S. Senator Ron Wyden
U.S. Representative Greg Walden
U.S. Representative Peter DeFazio
Jackson County Commissioners
Coos County Commissioners

California

U.S. Senator Barbara Boxer
U. S. Representative Wally Herger
Siskiyou County Supervisors

Federal Agencies

- U.S. Department of Agriculture –
  - U.S. Forest Service
    - Applegate Ranger District
    - Ashland Ranger District
    - Goosenest Ranger District
    - Klamath National Forest
    - Rogue River National Forest

- U.S. Department of Energy –
  - Bonneville Power Administration
  - Portland Office
  - Federal Regulatory Commission
    - Regional Office in Portland

- U.S. Department of Interior –
  - Bureau of Land Management
    - Klamath Resource Area
    - Redding Field Office
    - California State Office
    - Oregon State Office
  - U.S. Fish and Wildlife Service
    - Portland OfficeYreka Office
  - Bureau of Reclamation
    - Portland OfficeBoise Office
  - Bureau of Indian Affairs
    - Portland Office

- U.S. Environmental Protection Agency
  - Washington Office
  - Portland Office
  - Seattle Office

- U.S. Department of Transportation –
  - Federal Highway Administration
    - Portland Offices

- U.S. Department of Commerce –
  - NOAA Fisheries
    - Portland Office

State and Local Governments

Oregon

Oregon Department of Forestry
Oregon Department of Fish & Wildlife
Oregon Water Resources Department
State Historic Preservation Officer
Oregon Natural Heritage Program
Oregon State Department of Transportation
Oregon Department of Environmental Quality
City of Ashland
Southern Oregon Extension Center
Jackson County Farm Bureau
Jackson County Soil and Water Conservation District

California

California Department of Forestry
California Department of Fish & Game
California Air Resources Board
Siskiyou County Administrator
Siskiyou Co. Air Pollution Control District
Siskiyou County Planning Department

Washington

Northwest Indian Fisheries Commission

Idaho

Idaho Department of Environmental Quality

Washington, DC

National Museum of Natural History

American Indian Tribes and Nations

Confederated Tribes of Siletz
Quartz Valley Indian Reservation (Shasta Tribes)
Shasta Nation
Confederated Bands Shasta Upper Klamath Indians
Confederated Tribes of the Rogue -
    Table Rock and Associated Tribes
Confederated Tribes of Grand Ronde
Klamath Tribes

Libraries

Siskiyou County Library, Yreka Branch
Jackson County Library, Ashland Branch
Southern Oregon University Library,
    Ashland, Oregon

Organizations

Access Fund
American Lands Alliance
AT&T Wireless Services
Birch Creek Arts and Ecology Center
Blue Ribbon Coalition Inc.
Boise Casdcade Corporation
Buckhorn Springs
California Oregon Broadcasting, Inc.
California Wilderness Coalition
Colestine Rural Fire District
Dakubetede Environmental Education Programs
Defenders of Wildlife
Farm Service Agency
Friends of Living Oregon Waters
Friends of the Cascade-Siskiyou National
    Monument
Friends of the Greensprings
Friends of the Kalmiopsis
Greensprings Box R Ranch
Headwaters
Hillcrest Corporation
Hutchinson, Cox, Coons, DuPriest, Orr and
    Sherlock, P.C.
Jackson County Farm Bureau
Jackson County Stockman's Association
Klamath Herald and News
Klamath-Siskiyou Wildlands Center
Motorcycle Riders Association
Native Plant Society of Oregon
Northcoast Environmental Center
Northwest Environmental Defense Center
Odion Consulting
Oregon Chapter Sierra Club
Oregon Council Trout Unlimited
Oregon Extension of Houghton College
Oregon Historic Trails Advisory Council
Oregon Natural Desert Association
Oregon Natural Resources Council
Oregon State Public Interest Research Group
Oregon State University
Pacific Crest Trail Association
Pacific Power
PacifiCorp
People for USA, Grange #835
People for USA, Jackson County
People for USA, Rocky Mountain Region
Republicans for Environmental Protection
Rock and Arrowhead Club
Rogue Group Sierra Club
Rogue Valley Audubon
Roxy Ann Gem & Mineral, Inc.
Siskiyou Action Project
Siskiyou Bio-Survey
Siskiyou Chapter, Native Plant Society
Siskiyou County Monument Supporters
Siskiyou Project
Siskiyou Regional Education Project
Siskiyou Resource Geographics
Society for American Archaeology
Soda Mountain Wilderness Council
Southern Oregon Mountain Bike Association
Southern Oregon Research Extension Center
Southern Oregon Timber Industry Association
Southern Oregon University
The Larch Company
The Wilderness Society

Threatened and Endangered Little Applegate Valley
U.S. Public Interest Research Group
Umpqua Watersheds, Inc.
University of California, Davis
University of Florida
University of Oregon
US Timberlands
US West Communications
Wild Hope
Wilderness Rites
Wildwood Consulting
World Wildlife Fund

Chapter 5
Public Comments

CHAPTER 5
Public Comments

INTRODUCTION

This chapter addresses the public comments received on the Draft Resource Management Plan/Draft Environmental Impact Statement (DRMP/DEIS) and the BLM's response to those comments. All written comments were reviewed and considered. Comments that presented new data or addressed the adequacy of the document, the alternatives, or the analysis are responded to in this proposed plan pursuant to the BLM's National Environmental Policy Act (NEPA) Handbook (H-1790-1). There were also many comments which, although not required to be addressed, have been clarified in this chapter. Comments that expressed personal opinions or that had no specific relevance to the adequacy or accuracy of the draft plan were considered but not responded to directly. Similarly, comments received after the close of the comment period on December 19, 2002 were considered, but were not addressed in this document.

Over 17,000 letters commenting on the DRMP/DEIS were received. Specific comments from each letter were organized into 15 broad categories or areas of concern. The broad categories are listed below in alphabetical order:

- Access and Transportation (**ACC**)
- Archeology and Cultural Resources (**ARCH**)
- Biological Resources (**BIO**)
- Diversity Emphasis Area (**DEA**)
- Facilities (**FAC**)
- Fire and Wildland-Urban Interface (**FIRE**)
- General (**GEN**)
- Grazing (**GRA**)
- Lands (**LAND**)
- Monitoring (**MON**)
- Old-Growth Emphasis Area (**OGEA**)
- Recreation (**REC**)
- Special Forest Products (**SFP**)
- Water Resources (**WAT**)
- Wilderness Study Area (**WSA**)

COMMENTS AND RESPONSES ON THE DRAFT PLAN

This section contains the comments received from individuals, organizations, and governmental agencies during the comment period for the DRMP/DEIS. The comments are organized according to the 15 categories described above. Following each comment is the BLM's response.

ACCESS AND TRANSPORTATION

ACC-1

COMMENT: "The Proclamation requires that roads in the CSNM sufficiently justify themselves by their contribution to *protecting the CSNM*."

RESPONSE: The transportation system is essential to providing and maintaining adequate access to and within the monument for protecting the important resources and gaining a better understanding of the unique ecosystems for which the area was designated. The transportation system within the monument must be managed in recognition of valid existing rights, including right-of-way authorizations issued by the BLM to intermingled landowners, grazing lessees, communication site authorization holders, etc. The BLM conducted a detailed review and inventory of these rights and used this information in its transportation management decisions.

The BLM has included a substantial new roads analysis in this proposed plan. The new analysis used the BLM's GIS database to examine road density; proximity of roads to riparian reserves and fishbearing streams; proximity of roads to special reserves; effects of roads on hydrologic function; exotic species/noxious weeds; fire ignition and suppression; and livestock operations. The transportation analysis is described in detail in the **Transportation and Access** section of Chapter 2 of this plan. The BLM used its transportation analysis to help determine the proposed management for the transportation system. The proposed road treatments include road decommissioning, obliteration, closures, stabilization, and upgrades to improve hydrologic function (Map 22).

ACC-2

COMMENT: An array of comments was submitted on decommissioning or removal of roads. Comments included requests to decommission as many roads as possible (especially "jeep trails") using aggressive road obliteration techniques that include the re-establishment of natural contours, drainages and vegetation. For these jeep trails, "natural decommission" did not seem adequate, especially in steep terrain. Other comments recommended eliminating maintenance on roads, blocking roads, and letting nature reclaim them.

RESPONSE: The proposed plan would decommission approximately 53 miles of road (Map 22). The draft plan identified where mechanical and natural decommissioning would occur. The proposed plan does not distinguish between the two types of decommissioning. Specific methods for decommissioning a particular road will be determined after a field review at a site-specific level. The potential tools that will be used by the BLM to decommission roads are described in the **Primary Tools for Transportation** section of Chapter 2 in the proposed plan.

ACC-3

COMMENT: The road to Boccard Point should be closed due to its potential overuse.

RESPONSE: The road to Boccard Point (40-3E-5.0) is surfaced with rock and currently does not show signs of overuse. Use on this road is seasonal as snow usually prevents use during the winter months. The BLM continues to monitor road conditions within the monument. If this road shows signs of overuse in the future, the BLM will evaluate the situation and take action to prevent adverse environmental effects.

ACC-4

COMMENT: Numerous responses recommended that most of the roads within the monument be closed with the exception of roads needed for fire management and access to private property. Some respondents suggested locked gates for limiting public access, while allowing passage for management and residents. Some letters also recognized the need for access for recreation, firewood cutting, etc., and suggested managing access through keyed gates, allowing shuttles to enter designated roads to access recreation or slash decks for firewood. In other words, access should be allowed, but highly controlled.

RESPONSE: Many roads were closed with barricades or gates prior to monument designation, leaving other roads open for general access and management of the CSNM. Approximately 21 miles of road are proposed for closure in this plan (Map 22) in order to protect monument resources. It has been determined that the access needs of the residents and the monument users can be met by the transportation network in this proposed plan. Additionally, livestock lessees have been granted interim access for OHVs and vehicles on some otherwise closed roads. Matters of access to private property within the monument area will be handled in an on-going, case-by-case basis. Private landowners are assured legal access under federal and state law and in accordance with BLM policy. Numerous roads will remain open and available for the recreating public. Transportation management is described in detail in the **Transportation and Access** section of Chapter 2.

ACC-5

COMMENT: An array of comments was received on the monument transportation system including suggestions that some roads should be closed seasonally; some roads should just be closed and some "jeep trails" should remain open. Road closures should be done on a case-by-case basis.

RESPONSE: Every individual request for keeping specific roads open or closed was reviewed and evaluated by the BLM, and a determination was made on their status for this plan. Each request was evaluated on the basis of the considerations stated in the **Transportation and Access** section in Chapter 2 of this plan. The proposed road treatments are shown on Map 22 in this plan. In addition, many roads were closed with barricades or gates prior to monument designation, leaving other roads open for general access and management of the CSNM.

ACC-6

COMMENT: Some letters requested that existing roads be upgraded and routinely maintained to prevent erosion. Other letters requested that no new roads be built or paved.

RESPONSE: Road maintenance will continue throughout the monument including the removal of safety hazards, flood damage repairs, surface maintenance, ditch cleaning, and reducing erosion potential. Limited road construction is expected to occur within the monument. Access for in-holders, requirements under valid existing rights, or the relocation of an existing road in order to reduce impacts on the "objects of biological interest" are examples of when new road construction might occur. Road construction would be designed to minimize resource damage and to meet the BMPs described in Appendix D of the Medford RMP.

ACC-7

COMMENT: An array of comments mentioning the Schoheim Road was received ranging from endorsing its closure to questioning the legality of the proclamation. Some respondents wanted to keep it open for horses and bikes, or for administrative and emergency vehicles, or for general access to residences. Other letters suggested retaining and re-engineering the road to meet current road standards or decommissioning and replacing it with a new road encircling the Soda Mountain Wilderness Study Area.

RESPONSE: The Schoheim Road (41-2E-10.1) was closed to motorized and mechanized travel by the presidential proclamation (Appendix A). Horses are allowed on Schoheim Road. Bicycles would not be allowed because Schoheim Road was closed by the proclamation, and is proposed for decommissioning. The western and middle portions (Map 22) have been closed and would be decommissioned. The eastern portion would be closed for use by unauthorized vehicles except east of the gate at the Jenny Creek crossing in T.41S., R.4E., Sec. 9 to the Copco Road (40-4E-3.1), where it provides access to private property. The development of a road encircling the Soda Mountain Wilderness Study Area is outside the scope of this plan.

ACC-8

COMMENT: Comments about limited access caused by road closures included these concerns:

- access to timberland management;
- livestock and range improvement;
- access for fire and emergency search and rescue teams and equipment;
- recreation (hunting and camping);
- access for young, old, and handicapped persons needing motorized vehicle access;
- access for local property owners.

RESPONSE: Access concerns are addressed in detail in the **Transportation and Access** section of Chapter 2 of this plan. The primary objective of transportation management within the monument is to maintain a road network that is blended to restore the ecosystem and protect monument resources while serving human access needs. This proposed plan accomplishes this through the targeted reduction of road densities, while maintaining an appropriate level of access for law enforcement, various recreational activities, livestock lessees, private property owners, resource management, wildfire suppression, and other administrative uses.

ACC-9

COMMENT: Numerous responses were received identifying concerns about closing specific roads including Skookum Creek, Jenny Creek, Scotch Creek, and Randcore Pass.

RESPONSE: Every individual request for keeping specific roads open or closed was reviewed and evaluated by the BLM, and a determination was made on their status for this plan. Treatments for specific roads are listed below and in Chapter 2.

Skookum Creek Road

Skookum Creek Road (40-3E-28 and 40-3E-27.2) past the junction with Road 40-3E-27.1 would be improved and left open to the public to where Section 36 (T.40S.,R.3E.) and Section 1 (T.41S.,R.3E) meet. Skookum Creek road past where Section 36 (T.40S.,R.3E.) and Section 1 (T.41S.,R.3E) meet would be closed to unauthorized use.

Jenny Creek

The road that crosses Jenny Creek is the Schoheim Road and it was closed by the presidential proclamation (Appendix A).

Scotch Creek Road

The Scotch Creek Road (41-2E-1.1) has already been decommissioned.

Randcore Pass Road

In order to meet the intent of the proclamation, Randcore Pass Road (40-4E-19.2) south of the junction with road 40-4E-31.0 would be closed for use by unauthorized vehicles.

ACC-10

COMMENT: Numerous responses were received regarding the American with Disabilities Act (ADA), which mandates that all people have access and the responses identified particular roads and byways that should remain open.

RESPONSE: The BLM will comply with the ADA in the monument. The ADA does not prohibit the BLM from restricting travel routes or closing areas to vehicles in order to protect monument resources. Persons requiring wheelchairs for mobility may use a motorized or mechanized wheelchair to access any area in the monument.

ACC-11

COMMENT: Comments noted that vehicular traffic on improved roads causes less environmental damage; comments ranged from keeping visitors to already improved roads to improving roads to accommodate increases in visitors. Roads mentioned for improvement include the access to Pilot Rock parking area from Highway 66, the northern portion of Skookum Creek Road, and the short link just north of Soda Mountain.

RESPONSE: Road improvements are one of the tools used in this plan to reduce environmental damage and improve access. Specifically, the following roads would be improved:

Pilot Rock Road

The BLM would improve and maintain the existing Pilot Rock parking facility at the rock quarry along Pilot Rock Road (40-2E-33 and 41-2E-3). The Pilot Rock Road (41-2E-3) would be closed at this point and decommissioned beyond the quarry. A footpath along the existing road would allow access to Pilot Rock beyond the road closure (see **Recreation and Visitor Services** section of Chapter 2).

Skookum Creek Road

Skookum Creek Road (40-3E-28 and 40-3E-27.2) past the junction with Road 40-3E-27.1 would be improved and left open to the public to where Section 36 (T.40S.,R.3E.) and Section 1 (T.41S.,R.3E) meet. Skookum Creek road past where Section 36 (T.40S.,R.3E.) and Section 1 (T.41S.,R.3E) meet would be closed to unauthorized use.

Soda Mountain Lookout Road

The Soda Mountain Lookout Road (40-3E-21.1) would be improved for extended-season use from its junction with Road 39-3E-32.3 south to its junction with Road 40-3E-21.2. Road 40-3E-21.2 would also be improved for extended-season use. A gate would be installed on Road 40-3E-21.2 where it takes off to the lookout.

ACC-12

COMMENT: Prior to closing or decommissioning roads within the monument, the BLM needs to identify valid existing Revised Statutes (R.S.) 2477 rights-of-way. R.S. 2477 rights-of-way are property rights and must remain unimpaired.

RESPONSE: R.S. 2477 was repealed by the Federal Land Policy and Management Act (FLPMA) dated October 21, 1976 (90 Stat. 2793); however, FLPMA did not terminate valid rights-of-way established under R.S. 2477 prior to its repeal. On September 30, 1996, Section 108 of Public Law 104-208 (110 Stat. 3009) was enacted, which provides that no final rule or regulation of any agency of the federal government pertaining to the recognition, management, or validity of a right-of-way pursuant to R.S. 2477 shall take effect unless expressly authorized by an Act of Congress.

Subsequently, on January 22, 1997, former Department of the Interior Secretary, Bruce Babbitt, issued the Interim Department Policy on R.S. 2477 grant of right-of-way for public highways, until such time as final regulations can be promulgated. Because it is the BLM's position not to attempt to impair any claimed R.S. 2477 right-of-way, the interim policy (which is still in effect today) states that the BLM is "... to defer any processing of R.S. 2477 assertions except in cases where there is a demonstrated, compelling, and immediate need to make such determinations." If such a claim exists, only the State of Oregon and/or a local government entity can file a written request for a determination with the applicable BLM State Director having jurisdiction over the lands. The request must include maps and complete documentation that clearly corroborates where the highway was constructed, when it was constructed (the construction must have occurred prior to the repeal of R.S. 2477 -- October 21, 1976), and that the right-of-way meets the definition of a highway and was used for and by the general public. The written request, documentation and maps are reviewed by BLM staff to ensure compliance with the Department's interim policy and the request package is then forwarded to the Secretary of the Interior for final approval or disapproval. There are currently no filings for R.S. 2477 rights-of-way within the monument.

Until such time as regulations for R.S. 2477 are promulgated, BLM's current regulations allow the BLM to grant rights-of-way to any qualified individual, business entity, or governmental entity under the authority of FLPMA for access needs across public lands. The BLM's objectives for managing existing authorized rights and/or issuing new rights-of-way grants, is to insure that BLM-administered lands are available for needed rights-of-way that are consistent with local comprehensive plans and Oregon statewide planning goals and rules.

ACC-13

COMMENT: Numerous responses received indicated that the BLM did not conduct an adequate analysis of the transportation system within the monument.

RESPONSE: In response to these comments, the BLM has included a substantial new roads analysis in this proposed plan. The new analysis used the BLM's GIS database to examine road density; proximity of roads to riparian reserves and fishbearing streams; proximity of roads to special reserves; and effects of roads on hydrologic function, exotic species/noxious weeds, fire ignition and suppression, and livestock operations. The transportation analysis is described in detail in the **Transportation and Access** section of Chapter 2 of this plan.

ACC-14

COMMENT: Comments questioned the assertion in the draft plan that road closures are precluded by existing rights-of-way on 170 miles of roads.

RESPONSE: This is correct; the existence of rights-of-way on roads or road segments does not necessarily preclude closing a particular road. Valid existing rights include a variety of BLM authorizations such as right-of-way grants, leases, permits, and reciprocal agreements. Private landowners within the greater CSNM boundary (inholders) will retain access to their property. Existing state and federal law requires the BLM to provide reasonable access to non-federally owned land that is surrounded by public lands (Alaska National Interest Lands Conservation Act (ANILCA) of 1980). However, the closure of roads and/or road segments that are under existing right-of-way grants could be considered after conducting the appropriate level of site-specific analysis necessary to comply with NEPA, including the involvement of rights-of-way holders in the discussion of potential changes. Implementation procedures for these sorts of actions are described in the **Transportation and Access** section of Chapter 2. Right-of-way agreements are public record and are available for review and/or copying at the Medford District BLM Office, 3040 Biddle Road, Medford, Oregon.

ARCHEOLOGY AND CULTURAL RESOURCES

ARCH-1

COMMENT: A comment suggested that collection of petrified wood and arrowheads with hand tools for personal use should be allowed in specified areas.

RESPONSE: Removal of artifacts including petrified wood and arrowheads is prohibited by the Antiquities Act (1906) and the Archeological Resources Protection Act (1979), as well as by the presidential proclamation.

BIOLOGICAL RESOURCES

BIO-1

COMMENT: Comments questioned why lands on the west side of Interstate 5 (Colestine Valley) were included in the monument. They noted that this area is more degraded by human activity and they voiced concerns that cattle operators in this area will be responsible for keeping cattle off federal land.

RESPONSE: Federal lands west of Interstate 5 in the Colestine Valley area were designated by the presidential proclamation as part of the Cascade-Siskiyou National Monument (Map 1). Cattle operators are required to keep their cattle off of federal lands unless authorized by permit or lease whether or not the federal land is designated a national monument.

BIO-2

COMMENT: A letter from environmental groups stated that sensitive and endangered plant species occur in high densities in the Colestine Valley area (west of Interstate 5) and that it should be designated a botanical interest area.

RESPONSE:
The BLM portion of the Colestine Valley (Map 2) was designated as the Mariposa Botanical Area prior to monument designation. Lands outside the Mariposa Botanical Area receive the full protection of monument status.

BIO-3

COMMENT: Comments asked for protection of spotted owl habitat, especially in the Old-Growth Emphasis Area, and wanted management to reverse fragmented land ownership and usage, as well as for enhanced patchiness for northern spotted owls.

RESPONSE: Habitat of the northern spotted owl will be protected in the OGEA. No treatment will take place in Habitat Type 1, nor in the majority of Habitat Type 2 (see Chapter 2 for habitat type descriptions). Treatments proposed in Habitat Types 2, 3, and 5 are likely to improve overall habitat conditions for northern spotted owls. One of the objectives of proposed management is the reduction of fragmentation in northern spotted owl habitat.

BIO-4

COMMENT: Letters from hunters mentioned deer and elk winter range and Oregon Department of Fish and Wildlife's consideration of Agate Flat as the most important deer winter range in southwestern Oregon. These letters stated that managing the upper-elevation areas of the monument for late-successional forest conditions would limit forage availability for deer summer range on public lands. They suggested activities such as controlled burning, logging, and grazing as means of stimulating and rejuvenating vegetative growth.

RESPONSE: Proposed management in the monument is unlikely to significantly reduce summer range for deer and elk. Deer that winter on Agate Flat spread across the landscape in spring, summer, and fall. Likewise, elk herds disperse across a large area and utilize habitat well beyond the boundaries of the monument. Management of conifer stands for old growth characteristics may reduce summer forage in such stands. Any such reduction in forage will be offset by vegetative growth encouraged through thinning and fuel reduction treatments in other habitat types.

BIO-5

COMMENT: An array of comments was submitted regarding the threat of invasive, non-native species and noxious weeds. Comments ranged from recommending hand pulling and other less aggressive methods of control, such as restricting animal feed and motorized access, to comments stating that all manner of tools and actions for the control of noxious and exotic weeds, including herbicides, is necessary.

RESPONSE: A comprehensive strategy for treating noxious weeds across the monument is described in Appendix G. Noxious weed treatments could include manual weeding, biological control, herbicides, prescribed fire, or prescribed grazing. Focal areas identified for immediate treatments are identified in the weed strategy. Noxious weeds would be treated aggressively, contingent on funding. Current funding has allowed a mixture of hand-pulling and herbicide treatments on approximately 1,000 to 2,000 acres each year for the past several years.

BIO-6

COMMENT: The Interstate 5 corridor through the monument is a source of weed migration and sediment that is degrading Cottonwood Creek. Active restoration and stabilization needs to be pursued. The BLM should explore cooperative agreements and projects with ODOT to achieve restoration needs and reduce weed migration.

RESPONSE: Management of Interstate 5 is outside the scope of this proposed plan. The BLM does, however, provide input to ODOT when requested and during scoping for proposed projects related to this highway. The BLM is not opposed to exploring cooperative agreements that would help to protect and restore ecosystems within the monument.

BIO-7

COMMENT: Comments were received suggesting that amateur butterfly collection should be allowed in the monument.

RESPONSE: The proclamation specifically prohibits the removal of monument features. The removal of features includes, but is not limited to, the collection of any monument resources such as rocks, petrified wood, fossils, archaeological and cultural items, plants and parts of plants, fish and animals not regulated by ODFW, insects or other invertebrate animals, bones, waste, or other products from animals. This includes butterflies. Butterflies are one of the "objects of biological interest" identified by the presidential proclamation. Exceptions would include collections authorized by permit in conjunction with authorized research or management activities.

BIO-8

COMMENT: Habitat fragmentation is one of the leading contributors to endangerment of species and is particularly prevalent in the monument and surrounding private lands. Primary causes of fragmentation include:

- excessive road network;
- previous logging within and adjacent to the monument;
- barriers to fish migration; and
- hybridization and fragmentation of fish populations in the Jenny Creek area.

RESPONSE: Habitat fragmentation is one of the primary management concerns identified in the **Old-Growth Emphasis Area** section of Chapter 2. The planning team identified an area near Lincoln Creek and Pinehurst (Map 8) that is not currently providing suitable habitat connectivity for late-successional species due to past disturbances, such as logging or fire. Reduced habitat connectivity was one of the criteria used to determine priority areas for treatment. Many of the proposed management treatments are designed to reduce habitat fragmentation. Proposed vegetation treatments within the monument are designed to restore forest structure, reduce stand density, decrease fire hazard, and promote desired species. Most of the adjacent private lands have been previously harvested and are in various stages of recovery (re-growth). The proposed treatments, along with passive restoration (allowing previously harvested stands to grow back), will reduce habitat fragmentation within the monument over time. Additionally, approximately 53 miles of road (Map 22) would be decommissioned under the proposed plan, reducing habitat fragmentation by eliminating physical barriers both in the aquatic environments and the upland habitats.

BIO-9

COMMENT: The BLM should consult with the Oregon Department of Transportation and the Oregon Department of Fish and Wildlife on strategies to mitigate barriers to dispersal posed by public highways, including Highway 66 and Interstate 5.

RESPONSE: Management of state and federal highways is outside the scope of this proposed plan. The BLM does, however, provide input to these agencies when requested and during scoping for proposed projects related to these highways.

BIO-10

COMMENT: The BLM should monitor focal species using radio telemetry (e.g., deer, spotted owl, goshawk, and redband trout) or other detection devices to obtain data on the extent, frequency, direction, and type of movements made across particular linkages and barriers.

RESPONSE: The BLM monitors species according to Bureau standards as described in Appendix L of the Medford RMP and Appendix E of the Northwest Forest Plan, as amended. The BLM also evaluates the results of its own monitoring and studies and monitoring conducted by other agencies and individuals and incorporates research results and monitoring data into the monument's adaptive management strategy (Appendix C), as appropriate.

DIVERSITY EMPHASIS AREA

DEA-1

COMMENT: Comments were received recommending that more information needs to be gathered regarding the Diversity Emphasis Area (DEA) before extensive management is undertaken.

RESPONSE: The proposed plan identifies the use of pilot studies to examine the utility of treatments used to facilitate natural processes or to address particular issues within the grasslands, shrublands, and woodlands of the monument. The limited acreage of these pilot studies is considered to have little impact on current natural resources of the CSNM while improving our understanding of ecological processes within the DEA. Studies of historic conditions will provide BLM managers a context for understanding current conditions and identifying management objectives for plant communities within the DEA.

DEA-2

COMMENT: Fire suppression has resulted in increased cover by shrubs within formerly open woodlands. Comments were received that identified concerns about opening oak woodlands in the DEA due to potential effects on the plants under the canopy.

RESPONSE: As mentioned in DEA-1, the proposed plan identifies the use of pilot studies to examine the utility of treatments used to facilitate natural processes or to address particular issues within the grasslands, shrublands, and woodlands of the monument. The reduction of shrubs in the interspaces of oak woodlands through prescribed fire and manual means may allow the preservation of the large oak structure. The limited acreage of these pilot studies is considered to have little impact on current natural resources of the CSNM while improving our understanding of ecological processes within the DEA. However, as pilot studies are completed, new information gathered could result in new objectives or management direction in accordance with the monument's adaptive management strategy (Appendix C).

DEA-3

COMMENT: Conifer stands in the southern portion of the monument might be better managed as a part of the DEA, rather than intensively managed, thinned or removed, to maximize old-growth status. Comments recommended a north/south division between the DEA and the OGEA rather than the division of these areas by vegetation type.

RESPONSE: Conifer stands, whether located in the DEA or the OGEA, tend to suffer many of the same structural and forest health problems. Conifer stands in the DEA will be analyzed and managed in a manner consistent with historical conditions and in context with the surrounding landscape.

DEA-4

COMMENT: The BLM should further inventory and describe oak woodland types before taking management actions.

RESPONSE: No large-scale management action is planned for the DEA outside of the WUI until the pilot studies are completed and evaluated. Furthermore, plant community surveys are being completed under the mandated "study of livestock impacts on the objects of biological interest" of the CSNM. Additional composition and age-class surveys of shrublands will provide information about plant communities possibly transitional to oak woodlands. Repeat photography and other studies will provide an historic context for understanding plant community dynamics within the diverse communities of the DEA.

DEA-5

COMMENT: The BLM should develop a comprehensive plan for dealing with Sudden Oak Death (SOD) and its spread at the level of the entire Medford District. An obvious potential source of introduction for this pathogen is cattle or other livestock brought in from the Central Valley or Coastal regions of California, where SOD is widespread. For this reason it is essential to prohibit livestock that come from these regions from being turned out in the monument.

RESPONSE: SOD is widespread across California and Oregon and the problem is of greater scope than just the Medford District. The BLM is part of an interagency team that includes representatives from Animal and Plant Health Inspection Service, USDA Forest Service, State Department of Agriculture and state forestry organizations (Oregon Department of Forestry in Oregon). The interagency team recognized the possibility that some infected plants may escape detection and spread the pathogen, *Phytophthora ramorum*, into the landscape or forest environment. To address this possibility, an interagency team drafted the *Early Detection and Rapid Response Protocol for Forest and Landscape Environments* (outside the current regulated area) *with Plants Infected with Phytophthora ramorum*. The protocol describes the notification procedures required if *Phytophthora ramorum* is found in a forest or landscape environment. It also outlines protocols for eradication and suppression projects.

The State Department of Agriculture inspects cattle and other livestock that are transported across state lines. Currently, however, there is no inspection for the presence of *Phytophthora ramorum* on cattle or livestock.

DEA-6

COMMENT: Clarify what is meant by the term "shrub-invaded woodland." Because of the many intergrading oak woodland types this "shrub invasion" could mean anything from wedgeleaf ceanothus in a savannah-form woodland to birchleaf mountain mahogany in a shrubland community.

RESPONSE: In general, the term "shrub-invaded woodland" is used to describe places where the interspaces of a savannah-form woodland have become occupied by shrubs.

DEA-7

COMMENT: There are many plant communities in the monument that are not well understood. In these communities, research needs to be developed that will lead to an understanding of community dynamics and ecological functioning. The BLM should not be planning modifications in these types until much better understanding is developed. Further, these communities are currently supporting very significant endangered and rare plant species such as *Fritillaria gentneri* and *Calochortus greenei*. Maintenance and enhancement of habitat for these species should be given top priority.

RESPONSE: The proposed plan recognizes that the myriad of plant communities in the DEA is not well understood. Ongoing studies are needed to improve knowledge of historic conditions, the ways in which these ecosystems have changed in the last 150 years, and how plant communities and individual species react to fire and management activities.

This plan proposes to enhance the knowledge and understanding of the DEA through a series of pilot studies. The focus of pilot studies would be on altered habitats including areas converted to weeds or sown on-native grasses, areas of high livestock utilization, and decadent shrublands. As research and pilot studies are completed, new information could give the monument staff a basis for re-examining the DEA's management strategy.

Pilot studies would be limited to 10 acres in size with the exception of studies that involve broadcast burning. Studies that involve the use of broadcast burning would be limited to 100 acres in size. Broadcast burning would be limited to 200 acres annually, with no more than 100 acres occurring in a drainage area. Other types of prescribed burning would be limited to 10 acres in size. To mitigate potential impacts, pilot studies would be spread out spatially and temporally. Pilot studies would be placed to avoid sensitive plant communities associated with perennial streams, seeps, springs, and wetlands. Prior to implementation of multiple studies, additional analysis would determine the potential for site-specific and cumulative effects. The **Diversity Emphasis Area** section of Chapter 2 describes potential pilot studies that could occur in the DEA (Tables 2-3, 2-4, 2-5).

DEA-8

COMMENT: The Mariposa Botanical Area needs to be significantly expanded. Recent surveys indicate that the entire area of Hutton Creek east of Interstate 5 and the Colestine Valley west of Interstate 5 supports high densities of BLM-sensitive and federally listed endangered plant species. Part of this area is classified as a "recreation concentration zone" in the DRMP/DEIS, which is entirely inappropriate given the concentration of rare and sensitive plants in the area.

RESPONSE: Additional protective designation as a botanical area in not necessary since this area is included within the CSNM reservation. The sensitive and listed plants within this area are some of the objects of biological interest for which the monument was established to protect. The "recreation concentration zones" have been eliminated from the proposed plan.

FACILITIES

FAC-1

COMMENT: Facilities should only be constructed where needed to protect monument resources from damage.

RESPONSE: New facilities (e.g., trail construction, parking, toilets, trailheads, etc.) would only be constructed when needed to mitigate resource damage. The proposed plan would allow for the improvement and alteration of existing facilities as part of the monument's visitor services and interpretation program. Toilets could be provided, as necessary, at designated trailheads and parking sites.

FAC-2

COMMENT: A visitor center should be constructed along Interstate 5.

RESPONSE: The Medford BLM would remain a point of contact for visitor information. Facilities could be developed within the surrounding communities for use as visitor contact stations. Exact location of these facilities would be based on availability of infrastructure, environmental site constraints, economic viability, and funding. Currently, the BLM has signed a Memorandum of Understanding with the Friends of the Cascade-Siskiyou National Monument to manage a small, self-service visitor information center located at 11470 Highway 66 (Appendix K).

FAC-3

COMMENT: Comments suggested that existing communication sites should be removed from the monument as current technology makes them obsolete, and that no new communication sites should be built.

RESPONSE: The existing communication sites are a "collection" of separate authorized users utilizing a variety of equipment and technology to serve the public. No single technological advancement is likely to cause a mass exodus from the sites due to the variety of services offered and the public served. This proposed plan does not allow new communication sites to be developed.

FAC-4

COMMENT: What is the justification for allowing any new facilities to be built on existing communication sites?

RESPONSE: The proclamation recognized the uniqueness of the area and importance of the objects of biological interest in its designation of the CSNM. It also recognized valid existing rights with the following statement: "The establishment of this monument is subject to valid existing rights." Existing communication site users are protected under their valid existing rights (VERs) to continue use of their facilities. No new facilities would be built at the existing communication sites. Modifications to existing individual facilities (i.e., buildings) could be made if the proposed use does not increase the size (footprint) of the current authorized development and there are no interference problems for the other authorized users. For example, the addition or replacement of a new transmitting or receiving device (e.g., antennae) on an existing tower structure would be considered if the proposed device was consistent with the other existing electronic devices in terms of size, visual characteristics, and frequency compatibility. The BLM plans to complete a communication site survey for the Soda Mountain site in 2005. A comprehensive communication site management plan addressing site efficiency, visual resources, and impacts of new technology is planned for 2006 (dependent on funding). The BLM could permit modifications, such as a new device, following the completion of a site-specific management plan.

FIRE AND THE WILDLAND-URBAN INTERFACE

FIRE-1

COMMENT: An array of comments was received on fire which included managing fire as a natural and integral part of the landscape, reducing fire hazard and fuels loads on monument lands, and fear of losses due to catastrophic wildfires. While some letters stated that thinning should not be used as a method of fire control, others noted that much of the monument is rated as either moderate or very high fire hazard and thinning is necessary to lessen this hazard. Other letters pointed out the important role of patchiness in fire protection.

RESPONSE: Although fire is a natural and integral part of the landscape the mixed land ownership in the vicinity of the monument necessitates a policy of active wildfire suppression. The fire suppression direction (which complies with federal policy) for the monument is described in detail in the **General Management** section of Chapter 2.

Effective fire suppression efforts over the past 100 years have significantly influenced mixed conifer and pine forests in the OGEA by removing fire as a natural ecosystem process. In addition to altering the historic structure of forest stands, fire exclusion has created conditions that support higher fire intensities than would have been common historically. The primary forest restoration activities proposed for the monument involve removing smaller trees from dense forests and then using prescribed fire to imitate the role that low-severity fire once played in these ecosystems. These activities, designed to restore forest health, also reduce fire hazard, thereby achieving multiple management objectives simultaneously. Thinning forest stands can be an effective tool for restoring forest structure, reducing stand density, decreasing fire hazard, promoting desired species, and can also serve as a precursor to the reintroduction of fire through prescribed burns. Tree removal can be used to meet the overlapping goals of reducing fire hazard and restoring a more natural forest structure to currently overcrowded forests. A certain degree of patchiness across the landscape is inevitable due to adjacent private lands.

FIRE-2

COMMENT: The ridge-top fuel break proposed for Keene Creek ridge is inappropriate because of dry soil conditions and the potential to lead to "blow down" and edge effects. There is no discussion of the ecological impacts of the proposed ridgeline fuel break between the north and south management zones. This proposed fuel break could potentially disrupt connectivity within the monument and may harm the objects that the monument was established to protect.

RESPONSE: The previously proposed ridge-top fuel break is no longer a part of the proposed plan.

FIRE-3

COMMENT: Some comments stated that the fire threat was being exploited as an excuse for thinning, but others stated that many parts of the monument have too many current and historical impacts to be left without some active management to reduce fuel loads. These letters supported more active management in reducing fire risk. They suggested at least removing the fuel load (e.g., fallen branches, slash piles and thick brush) from forest understories by mechanical and/or manual means.

RESPONSE: The proposed management plan will initiate projects that remove understory fuels by several means, particularly in the WUI. These methods are described in the **Old-Growth Emphasis Area and the Diversity Emphasis Area** sections of Chapter 2. The draft management plan analyzed a full range of alternatives for both restoring forest health and reducing fire hazard across the landscape. The proposed management plan presents a combination of "hands-off" management in areas of late-successional and old-growth forest while taking a more active approach in previously managed stands. With the exception of some treatments in the wildland-urban interface, thinning would only be used to restore forest health. Projects designed to restore forest health would likely result in reduced fuel hazard as well.

FIRE-4

COMMENT: Some respondents suggested that "one-size-fits-all" fire hazard reduction is not appropriate. Areas that have been managed for timber production were reportedly more fire-prone than areas left untouched and should be treated differently.

RESPONSE: Under the proposed plan, untreated forest areas will be managed differently than previously treated areas. A variety of methods are available for reducing fire hazard and restoring plant communities to a more natural condition including thinning, weed treatments and prescribed burning. These methods are described in the **Old-Growth Emphasis Area and the Diversity Emphasis Area** sections of Chapter 2. Pilot studies would be used in the DEA to evaluate the effectiveness of treatments. Site-specific evaluation and analysis would precede implementation of these treatments.

FIRE-5

COMMENT: Some responses stated that theories on fire suppression drawn from other areas are not applicable to this unique environment. Comments questioned the BLM's assessment of high fire hazard risk, particularly in areas of patchiness, rocklands or grasslands.

RESPONSE: Utilizing information from studies conducted elsewhere to form hypotheses and decisions is standard practice in both research and land management. The forest communities located in the monument are not unique to the monument. The dry forest types and mixed conifer forests located in the monument are found elsewhere in the western United States and studies have shown the consequences of fire exclusion in these forest types. The management plan was primarily based on knowledge of the effects of fire exclusion and present-day fire behavior in and near the monument.

The fire hazard assessment for the monument was done over the entire landscape at a coarse scale. There are areas of rock outcrops that were combined with the adjacent fuel types to map fire hazard. If these areas were large enough to greatly impact fire behavior they were mapped as such. Fires that spread by spotting can easily cross even large rocky areas. Grassland were mapped as grasslands and where given a hazard rating based on fire behavior in grasses that are cured. Assumptions made regarding fire-hazard would be field verified prior to project implementation,

FIRE-6

COMMENT: Some respondents support using prescribed fire for fuel reduction. Letters specified that prescribed fire be done under "carefully-managed, cool-burning conditions." Others expressed concern that catastrophic fires could result from prescribed or controlled fires. Some opposed prescribed burning in Old-Growth Emphasis Areas. Others thought that prescribed burning could jeopardize rare plants.

RESPONSE: Implementation of prescribed burning would only occur after project-level analysis in a future planning action. The impacts to rare plants and all other resources, as well as the risk of escape, would be described and evaluated in the project-specific NEPA document.

FIRE-7

COMMENT: Comments suggested the creation of specific procedures and protocols for initial attack of wildfires.

RESPONSE: The BLM coordinates with the Oregon Department for fire prevention, protection, and suppression services. Procedures for initial attack of wildfires are covered in the western Oregon suppression contract. Areas within the monument that require special fire suppression techniques are listed in Appendix O.

FIRE-8

COMMENT: The BLM should create 220-foot wide, shaded fuel breaks along main roads in the monument for roadside ignition prevention, safety for firefighters and increased visibility for safer traffic conditions. This roadside treatment should also be applied on closed roads so they can become fuel breaks.

RESPONSE: The BLM will continue to evaluate creating fuel breaks along roads on a case-by-case basis in consultation with the Oregon Department of Forestry. Any projects to implement fuel breaks along roads would be evaluated in a project-specific NEPA document.

FIRE-9

COMMENT: Concern was expressed that the draft doesn't adequately address the role of private lands and rural interface. Approximately two-thirds of fires that have occurred in the area in the last 31 years have been on private lands. Responses encouraged public education and outreach about fuel-reduction efforts on private lands and some respondents expressed desire that the BLM reduce fuel loads on neighboring public lands. High visibility pilot projects in the interface designed to instill confidence and trust in the use of prescribed fire were recommended.

RESPONSE: The OGEA is adjacent to several thousand acres of private land in the Greensprings community. In 2000, under provisions of the National Fire Plan, the Oregon Department of Forestry identified the Greensprings as a "community at risk" of a wildland fire spreading from public to private lands. Likewise, resources in the monument are also at risk from fires that originate on private land. Fire history data over the past 37 years (Appendix E) indicates that the likelihood of a fire originating on private land is higher than on public land (3.32 fires/1,000 acres versus 2.7 fires/1,000 acres). Lightning is the primary cause of fire ignitions on public land (64 percent) while human-caused starts are the primary source of fire ignition on private lands (59 percent).

Proposed treatments in the wildland-urban interface are described in the **Old-Growth Emphasis Area** section of Chapter 2. In order to help private property owners protect their homes from wildfire, prior written authorization could be given to homeowners to create a defensible space around their homes.

Public outreach is occurring in the wildland-urban interface in the monument by Oregon Department of Forestry. The areas identified for potential treatment on public lands under this plan in the WUI would compliment projects that have been completed or are proposed on private lands.

FIRE-10

COMMENT: Other suggestions to reduce fire danger from human activity included:

- limit vehicular road access during fire season
- limit access to backcountry and campfires during fire season

RESPONSE: The BLM evaluates the severity of the fire season and can choose to implement any of the above methods during fire season to reduce the risk of fire-starts from human activities.

FIRE-11

COMMENT: The fuel hazard model used in the draft does not adequately take into consideration risk.

RESPONSE: Fire hazard and risk has been re-evaluated in this proposed plan. Appendix E explains some of the different variables and tools used throughout the planning process to help determine the role that fire has played in shaping the monument's ecosystem, the effects of fire exclusion and other human influences on the ecosystem, the fire hazard and fire risk within the monument.

GENERAL

GEN-1

COMMENT: "All existing allocations, future management planning or activities in the CSNM must be directed toward protecting, restoring, and enhancing the biological diversity of this unique area."

RESPONSE: The presidential proclamation reserved the CSNM in recognition of its remarkable ecology and to protect a diverse range of biological, geological and historic objects. The proclamation provides the principal management direction for the CSNM and clearly dictates that the BLM manage the monument "for the purpose of protecting the objects identified." The proclamation made certain other provisions for monument. The proclamation's acknowledgement of valid existing rights essentially preserves a variety of BLM authorizations such as right-of-way grants, leases, permits, reciprocal agreements, and withdrawals. Private land owners within the monument are assured access to their property. Livestock grazing was allowed to continue with appropriate terms and conditions under existing laws and regulations while the BLM studies the impacts of livestock grazing.

In addition, there are a variety of other legal requirements and directives governing the planning process which were considered by the BLM in developing proposed management plan. In addition to the presidential proclamation, provisions of the Federal Land Policy and Management Act (FLPMA) of 1976, as amended, and the National Environmental Policy Act (NEPA) provide the primary direction for the preparation of this resource management plan. For more information refer to Chapter 1, "Purpose and Need", "Summary of Planning Considerations and Criteria" and "Planning Considerations".

GEN-2

COMMENT: Respondents requested that management be careful and conservative, recognizing the complexity of ecosystems. They asked that management be incremental, using adaptive management with well-designed monitoring.

RESPONSE: This same concern, "that management activities are careful and conservative, recognizing the complexity of ecosystems" and "that management be incremental" was used as a guiding principal to build many of the features of this proposed plan. In the DEA and portions of the OGEA, the plan proposes to enhance the knowledge and understanding through a series of pilot studies. As research and pilot studies are completed, new information would give the monument staff a basis for re-examining the management strategies. New objectives or management direction would be developed in accordance with the monument's adaptive management strategy (see Appendix C). The monitoring and adaptive management strategy is a key component to ensure that ecological objectives are being met.

GEN-3

COMMENT: Comments requested that the best science and research precede management. Advisory boards, peer review or science review panels were suggested.

RESPONSE: Advisory boards, peer reviews, and science panes have been used and will continue to be used to examine monitoring and research results in the CSNM. In 2001, the BLM used a peer review process to procure feedback on the design of the original *Draft Study of Livestock Impacts on the Objects of Biological Interest.* In 2004, an Oregon State University scientific review panel and a working group made up of members of the Klamath and Southwest Oregon Provincial Advisory Committee were asked to review and made recommendations on a later version of the Livestock Study. The BLM will continue to consult with advisory boards, peer reviewers, and scientific panels, as needed.

GEN-4

COMMENT: Issues of long-term funding were raised and some questioned whether the BLM could access the level of funding necessary for the level of ecosystem restoration and protection needed.

RESPONSE: After the management plan is finalized the BLM will develop an "Implementation Strategy" to determine the funding needs implementing the plan and work towards meeting the objectives.

GEN-5

COMMENT: The BLM should protect the biodiversity within the monument. One method suggested was to allow deer, elk and other native grazers to promote the biodiversity. Others thought limited human intervention and disturbance was a better approach. Comments ranged similarly in managing for restoration and stability, from aggressive restoration of natural disturbances to a more conservative approach to maintaining rare and unique natural ecological processes.

RESPONSE: In the draft management plan the BLM examined alternatives that ranged from a "hands off" approach to aggressive intervention. The proposed plan recognized the need to proceed with caution. The use of pilot projects in the DEA and the overall monitoring and adaptive management strategy reflect this concern. Management activities would be avoided where adverse ecological impacts could outweigh potential gains. For example, prior to the implementation of any project the BLM would consider the following: the proximity to populations of noxious weeds; the susceptibility of site soils to weed invasions, the potential for adverse impacts to the surrounding landscape; the proximity of stands to sensitive wildlife sites such as northern spotted owls or other raptor nests; the presence of rare or sensitive plants that may be affected by proposed treatments; the timing of treatments in relationship to other management activities; the potential effect of treatment on existing areas of strong habitat connectivity; and the natural vegetation potential for a particular site.

GEN-6

COMMENT: The BLM National Monuments were established to "protect historic landmarks, historic and prehistoric structures, or other objects of historic or scientific interest," in contrast to the National Park Service mandate, to "provide for the enjoyment of future generations." A number of letters asked that the monument be preserved as a legacy for future generations and some mentioned that future generations should have access to such natural beauty. Respondents stated that the monument was not created as a tourist attraction.

RESPONSE: The monument is a part of the BLM's National Landscape Conservation System (NLCS), established to protect some of the nation's most remarkable and rugged landscapes. A key NLCS objective is to provide opportunities for the individual to explore and discover these special areas. Proposed monument management seeks to accommodate existing and future uses in a manner that balances recreation with the protection of monument resources and natural ecosystem processes. Implementation of management activities outlined in the proposed plan has been designed to balance recreational opportunities with the protection of monument resources by monitoring areas for unacceptable changes, consider alternatives to site development (road closures, permits, etc.), educate users about the potential negative impacts of different activities and use law enforcement to ensure that laws and regulations pertaining to the protection of monument resources are followed.

GEN-7

COMMENT: The CSNM is a high elevation land bridge of regional and national significance. The importance of the monument as a "biological crossroads" has been widely recognized by federal agencies. The BLM needs to fully recognize landscape connectivity as key to maintaining the monument's integrity as a biological crossroads. The BLM's management plan must provide for sufficient protection, maintenance, and restoration of landscape connectivity to assure the monument's crossroad function.

RESPONSE: Additional information related to the importance of landscape connectivity has been incorporated in the following sections of Chapter 2: **Old Growth Emphasis Area, Diversity Emphasis Area, Riparian Areas and Aquatic Resources, Livestock Grazing, and Transportation and Access**. This information was used to help develop the final management plan in order to protect, maintain and restore landscape connectivity in the monument.

GEN-8

COMMENT: The draft plan was completed by the spring of 2001, and does not reflect information gathered during the 2001 and 2002 field seasons.

RESPONSE: The BLM has updated the final management plan to include information gathered during the 2001-2003 field seasons.

GEN-9

COMMENT: An array of comments were submitted on the economic effects of the monument ranging from "the monument will be good for the economy" to "the monument will limit jobs related to timber production and hurt the county's ranching community." Some respondents thought local economic benefit should not be considered in managing the monument.

RESPONSE: The economic impacts of this plan on local economies are expected to be minimal, but positive. Impacts to local economies result primarily from direct BLM spending and from spending by visitors. Direct spending by BLM on management activities such as forest management could have some beneficial effects on local communities. Local economies could also be affected by many factors that are not directly the result of BLM actions, but may be influenced by how the monument is managed. Some of these factors may have socio-economic impacts that are even larger than those associated with this plan. Private enterprises, local government, and others make decisions regarding infrastructure, business development, and service expansions. These decisions may result in significant economic impacts. Further discussion of economics can be found in Chapter 3, "Impacts on Local Economies".

GEN-10

COMMENT: There were some concerns about the cost to the government and the taxpayers of scientific studies, and monitoring.

RESPONSE: The monitoring process will collect information in the most cost effective manner as possible. Unnecessary detail and unacceptable costs will be avoided by focusing on key monitoring questions and proper sampling methods. The level and intensity of monitoring will vary, depending on the sensitivity of the resource, process or trend and the scope of the proposed management activity. In regards to livestock management, the presidential proclamation directed the BLM to "study the impacts of livestock on the objects of biological interest in the monument with specific attention to sustaining the natural ecosystem dynamics." The BLM has since developed *The Draft Study of Livestock Impacts on the Objects of Biological Interest* (Livestock Impact Study).

GEN-11

COMMENT: Local residents requested priority access to contracting opportunities for local landowners. They also requested that pilot projects related to management activities be established that involve adjacent landowners.

RESPONSE: The use of stewardship contracts which could involve local residents was identified as one of the mechanisms for accomplishing restoration projects in the OGEA. In the DEA and portions of the OGEA, the plan proposes a series of pilot studies. Stewardship contracts could be considered in implementing the pilot studies.

GEN-12

COMMENT: Comments questioned the science utilized for the draft plan. Examples include statements that the BLM:

- placed too much emphasis on unproven experimental management prescriptions
- should recognize and use the "core-buffer" management principle
- should have high burden of proof before undertaking intensive management
- should have high burden of proof before limiting intensive management
- needs to place a stronger emphasis on scientific uncertainties
- needs to continue water and air quality studies
- should use radio telemetry to monitor focal species.

RESPONSE: The BLM is also concerned about "undertaking intensive management" without an adequate knowledge and understanding of the plant community dynamics, especially in the DEA. As a result, BLM would undertake pilot studies prior to the design and implementation of intensive treatments. To mitigate potential impacts, pilot studies would be spread out spatially and temporally. Pilot studies would be placed to avoid sensitive plant communities associated with perennial streams, seeps, springs, and wetlands. Prior to implementation of multiple studies, additional analysis would determine the potential for site-specific and cumulative effects. See Appendix C for the "Implementation, Monitoring, and Adaptive Management Framework". The credibility of an adaptive management process rests in part on the routine application of an outside check on the use of technical and scientific information, including monitoring. Independent reviews and partnerships with outside groups (e.g. Oregon State University and U.S. Fish and Wildlife Service) can provide verification that plans, evaluation and changes in management strategies are consistent with current scientific concepts. In addition, collaboration with the local communities, monument interest groups, and users of the monument ensure credibility and the success of managing the unique elements of the CSNM.

GEN-13

COMMENT: An analysis to assess the cumulative impacts from logging, road building, irrigation ditches, grazing, and other barriers to fish and wildlife dispersal should be conducted. A detailed roads analysis considering the impacts of roads on the monument's connectivity and objects of interest should be completed.

RESPONSE: The BLM has included a substantial new roads analysis in the proposed plan. The new analysis used the BLM's GIS database to examine road density; proximity of roads to riparian reserves and fishbearing streams, proximity of roads to special reserves; effects of roads on hydrologic function, exotic species/noxious weeds, fire ignition and suppression, and livestock operations. The transportation analysis is described in detail in the **Transportation and Access** section of Chapter 2 of this plan. An evaluation of cumulative effects can be found in Chapter 3. A detailed analysis of the direct, indirect and cumulative affects of roads on monument resources is located in Chapter 3.

GEN-14

COMMENT: The plan should remain flexible and dynamic, open to change when necessary for conservation, to respond to emerging social values and to achieve adaptive action. Extensively peer-reviewed science should be used as the basis for careful conservation efforts. Ten-year intervals for plan review were recommended.

RESPONSE: The proposed plan has been designed to remain flexible and dynamic and the use of peer-reviewed science is part of the design of the monitoring and adaptive process as described in Appendix C.

GEN-15

COMMENT: In order to comply with NEPA provisions, provide specific forest change detection analysis and other impacts to adequately assess cumulative impacts on connectivity functions.

RESPONSE: In accordance with the requirements of 40 CFR 1508.7, 1508.8 and 1508.27, the impacts of implementing the proposed plan are evaluated in Chapter 3 (Environmental Consequences). The effects of the proposed plan on connectivity functions are addressed in the **Effects on Terrestrial Wildlife Species**, **Effects on Riparian Areas and Aquatic Species** and **Cumulative Impacts** sections in Chapter 3.

GEN-16

COMMENT: The inclusion of the Oregon Gulch Research Natural Area (RNA) and Scotch Creek RNA management plans as appendices may not be consistent with the requirements of NEPA. The RNA plans are presented as written as "common to all alternatives", not subject to public discussion or input, and without a reasonable range of alternatives.

RESPONSE: The management plans for the Scotch Creek RNA and the Oregon Gulch RNA are independent of the CSNM Resource Management Plan. The RNA management plans were included as appendices in the draft plan and were made available for public comment at that time. Changes to the RNA Plans were made based on comments reviewed. They were developed based on the criteria of the Oregon Natural Heritage Program. The RNAs were designated prior to the creation of the CSNM. The proposed CSNM plan incorporates these designations and adopts the management plans associated with them. The RNA plans do not necessarily require NEPA analysis and decision; however, implementation of these plans would require the appropriate level of site-specific environmental analysis that analyzes a full range of management alternatives as required by NEPA. The RNA plans are included as appendices (Appendix L and Appendix M) to this proposed monument plan.

GRAZING

GRA-1

COMMENT: Livestock grazing and its impacts should be considered in this EIS. Grazing impacts are impossible to detach from a thorough analysis of environmental impacts or an ecosystem assessment. Concerns regarding grazing environmental impacts include:

- riparian damage and deleterious impacts on native fish
- harm to seeps, springs and creeks
- alteration of meadows, and negative hydrologic and water quality effects
- spread of noxious weeds
- trampling of rare plants
- reduction of winter forage for by deer and elk.

RESPONSE: The draft plan deferred most discussion, analysis, or decisions regarding livestock grazing in the CSNM until a livestock impact study (*Study of Livestock Impacts on the Objects of Biological Interest in the Monument)* could be completed. The livestock impact study is currently in progress. However, as noted in the public comments received by many individuals, organizations, and other governmental agencies, a comprehensive management plan is dependent upon the integration and analysis of livestock grazing management practices in coordination with other proposed management activities. The proposed plan has been modified to include a discussion of livestock grazing in the monument and the current and future management of livestock grazing under existing laws and regulations, including the direction found in the presidential proclamation.

In Chapter 3, impacts of direct, indirect, and cumulative effects of the proposed management activities for livestock grazing are analyzed in the short-term and long-term. The effects analysis for livestock grazing on various resources includes effects to the OGEA, DEA, riparian areas/

wetlands and aquatic species, water resources, soils, terrestrial wildlife species, special status species, and recreational use. In the short-term, the presidential proclamation mandated that "Existing authorized permits or leases may continue with the appropriate terms and conditions under existing laws and regulations." In the long-term, the presidential proclamation directed the BLM to "study the impacts of livestock on the objects of biological interest in the monument with specific attention to sustaining the natural ecosystem dynamics." The **Livestock Grazing** section in Chapter 2 of this plan describes the process for determining if livestock grazing is compatible with "protecting the objects of biological interest" and evaluating the allotments for lease renewal to ensure that livestock grazing is consistent with current laws and regulations.

GRA-2

COMMENT: Livestock grazing is beneficial because it serves as:

- an effective management tool
- promotes mid-successional vegetation for deer browse
- benefits the local agricultural economy.

RESPONSE: Impacts of livestock grazing are discussed throughout the Environmental Consequences in Chapter 3. The effects analysis for livestock grazing assessed both positive and negative effects.

GRA-3

COMMENT: Some respondents expressed concern about the economic plight of ranchers and the financial impact to them from the potential loss of BLM grazing permits. Farmers and ranchers serve a valuable role of maintaining and restoring large areas of landscape for wildlife habitat.

RESPONSE: Following the evaluation and determination of rangeland health and compatibility "with protecting the objects of biological interest", lease renewals would be subject to the appropriate level of environmental analysis as prescribed under NEPA. The NEPA analysis would develop a full range of management alternatives for livestock grazing consistent with all applicable legal authorities, including the presidential proclamation. Alternatives would include current grazing management, a no-grazing alternative, and other alternatives. Evaluation of the consequences of implementing each alternative would include consideration of economic and logistical feasibility.

GRA-4

COMMENT: A letter from an adjacent landowner expressed concern that he may have to erect a fence to keep cattle off the monument. Although he is not running cattle on his own property, he does not welcome the prospect of being responsible for keeping open-range cattle off the monument.

RESPONSE: Individual landowners that do not have cattle are not responsible for keeping livestock off the monument. Private landowners who own livestock are responsible for their own livestock and are required to keep their cattle off federal lands unless authorized by permit or lease, whether or not the federal land is designated a national monument.

GRA-5

COMMENT: Livestock grazing should be monitored. Some responses stated that grazing should be allowed in exceptional circumstances or for research purposes.

RESPONSE: The BLM is currently engaged in conducting studies, monitoring projects, and a literature review to determine "the impacts of livestock on the objects of biological interest in the monument with specific attention to sustaining the natural ecosystem dynamics" as directed by the presidential proclamation. The Livestock Study and associated data collection is ongoing.

GRA-6

COMMENT: Support was expressed for the mandated livestock grazing impact study, although some voiced concern about its cost and another letter said that buyouts are more economical than studies of grazing impacts. Many responses suggested that the BLM pursue a voluntary buyout program to retire grazing allotments.

RESPONSE: The pursuit of a voluntary buyout program to retire grazing allotments is outside the scope of this plan. Grazing lessees pay the BLM a grazing fee for the privilege of grazing their livestock on public land. These fees are based on the amount of livestock grazed, and the length of time the livestock is grazed on public lands (animal unit months, or AUMs). The BLM does not attach monetary value to these grazing leases. Thus, there is nothing for the BLM to "buy" from the grazing lessees.

GRA-7

COMMENT: National Environmental Policy Act "intends that all anticipated significant actions and effects of a proposal are taken into account. A separate grazing study is inappropriate and inconsistent with NEPA."

RESPONSE: The Livestock Study is not a separate NEPA document. The Livestock Study consists of a series of studies, monitoring projects, and literature review that will be used to make an overall assessment of rangeland health. The assessment will be used to determine whether or not current livestock grazing practices within the monument allotments are meeting the standards and following the guidelines described in the Oregon Standards for Rangeland Health and whether or not current livestock practices are compatible "with protecting the objects of biological interest." Following the evaluation and determination of rangeland health and compatibility "with protecting the objects of biological interest", lease renewals would be subject to the appropriate level of environmental analysis as prescribed under NEPA.

GRA-8

COMMENT: The lack of consideration of the plan's affect on the custom, culture and economy of local communities is a violation of NEPA. Ranching profitability will be affected with changes to the livestock grazing program and this has not been considered in this EIS.

RESPONSE: Livestock grazing continues as an authorized use within the monument. The proclamation mandated that "Existing authorized permits or leases may continue with the appropriate terms and conditions under existing laws and regulations." Following the evaluation and determination of rangeland health and compatibility "with protecting the objects of biological interest", lease renewals would be subject to the appropriate level of environmental analysis as prescribed under NEPA. The NEPA analysis would develop a full range of management alternatives for livestock grazing consistent with all applicable legal authorities, including the presidential proclamation. Evaluation of the consequences of implementing each alternative would include consideration of economic and logistical feasibility.

LANDS

LAND-1

COMMENT: An array of comments was received regarding the size of the monument. Some stated that the size of the monument should remain the same and, if anything, expanded. Some asked that boundaries be redrawn to include the contiguous public lands in California. Others asked that a buffer zone be created around the monument where management would ensure protection of monument values. A few comments asked that boundaries be redrawn and/or minimized, particularly to exclude inholders.

RESPONSE: The Cascade-Siskiyou National Monument was established on June 9, 2000 when President William J. Clinton issued a presidential proclamation under the provisions of the Antiquities Act of 1906 (Appendix A and B, respectively). The presidential proclamation reserved all "lands and interests in lands owned or controlled by the United States" within the greater monument boundary (Map 1). Expansion of the monument outside the greater monument boundary is outside the scope of this plan.

The CSNM designation applies only to federally managed land. The external boundary depicted on Map 1 is for planning purposes only. Privately owned property within this outer boundary is not encumbered by, or in any way part of, the CSNM designation.

LAND-2

COMMENT: Many letters suggested establishment of a voluntary buy-out program to acquire private lands within the greater monument boundary in order to facilitate management across a more contiguous landscape. Others expressed concern that the BLM would not have the capacity to manage these lands and land acquisitions should not be part of the management plan.

Justifications for purchasing private property from willing sellers included:

- the need for wildlife habitat connectivity
- possibility of enhancing water quality
- it would provide a buffer
- to increase uniform ownership.

Justification for opposition to acquiring more land included:

- the government should not manage anymore land
- the government should not "take" private land
- loss of private lands from tax base
- private landowners are better stewards.

RESPONSE: Land tenure adjustments are described in the General Management section of Chapter 2. The BLM could acquire additional lands within the greater monument boundary through purchase and exchange with willing participants. The BLM would utilize land acquisition to help meet the management goals and objectives described in this plan. Lands may be acquired on a case-by-case basis through purchase, donation, conservation agreements/easements, or by exchange, consistent with existing land-use planning, regulation, and law. Lands may be acquired by exchange only where the public land involved in the exchange is located outside the CSNM.

LAND-3

COMMENT: Why does the BLM have to complete the final resource management plan prior to acquiring private lands intermingled within monument lands from willing sellers.

RESPONSE: Land could be acquired to help meet the management goals and objectives described in this plan. The BLM deferred consideration of land acquisition until the resource management plan is approved in order to have clear guidance on prioritizing available properties. Any land acquisition will comply with the criteria summarized in the **General Management** section of Chapter 2.

LAND-4

COMMENT: Internal acquisition of private property and issues of rights-of-way need to be addressed in the plan.

RESPONSE: Within the monument, private property can be sold and bought on the open market with no restrictions. Access for legal ingress and egress to private land is recognized by the BLM and protected under Alaska National Interest Lands Conservation Act (ANILCA) and state law. This issue is addressed in the **General Management** section of Chapter 2 in the proposed plan.

LAND-5

COMMENT: Full-disclosure of rights-of-way agreements needs to be done to comply with 40 CRF 150.22, 1502.15 and 1502.16.

RESPONSE: Current BLM authorizations are recognized and protected under Valid Existing Rights (VERs). There is a listing of these authorizations in the proposed plan (Appendix P). The public can obtain detailed information on any of these authorizations by contacting the Medford District Office of the BLM. These authorizations are a matter of public record. All authorizations have terms and conditions which the holder(s) needs to comply with during the life of the grant.

LAND-6

COMMENT: Management of the monument should be at the landscape level in coordination with other ownerships and federal agencies. Connectivity across the landscape at this "biological crossroads" needs to be considered and fragmentation caused by different ownerships and managements should be reduced.

RESPONSE: The BLM will continue to coordinate with other ownerships and agencies in the management of the CSNM. The BLM and the Oregon Department of Forestry (ODF) jointly fund a community forest protection officer. This position coordinates with the BLM in development of wildfire prevention strategies, ongoing community education, and assisting private land owners with national fire plan grants. In the Strategy for Controlling the Spread of Noxious Weeds and Other Invasive Grasses (Appendix G), educating private land owners within the greater monument boundary on weed issues and treatment strategies is paramount to succeeding in controlling and eradicating weeds in the monument. Partnerships and cost-sharing projects, moreover, are an efficient way to treat larger landscape areas. Working with adjacent land owners, including companies under BLM-permitted activities (e.g., power companies), to prevent the spread of weeds across ownership boundaries, and addressing noxious weeds in all land management activities is critical to success for the landscape as a whole. Identification booklets, preventive strategies, and recommended treatment methods could be a valuable tool for educating and developing partnerships with the monument public. In addition, collaboration with the local communities, monument interest groups, and users of the monument ensure credibility and the success of managing the unique elements of the CSNM.

LAND-7

COMMENT: An array of letters was received on issues related to rights-of-way. One letter stated that the allocation of lands to existing rights-of-way corridors and communication sites, as well as hydroelectric developments, is in violation of the proclamation. Some comments asked for removal of existing communication facilities on Soda Mountain and prohibition of future ones.

RESPONSE: All holders of current BLM land use authorizations are protected under VERs to continue to hold those authorizations and to "enjoy" the rights attached to them. VERs were explicitly recognized in the proclamation and holders retain their legal rights as permitted under the terms and conditions stated in the specific authorization. Existing communication site users will continue to operate in the monument unless users choose to relinquish their rights in the future. New communication sites within the monument are not allowed under the proposed plan.

LAND-8

COMMENT: The DEIS states that common mineral materials from existing quarries can continue to be used for administrative purposes in Alternatives A, C, and D. The DEIS does not mention, however, that allowing this use is inconsistent with the Mineral Materials Act of 1947, which specifically excludes the disposal of mineral materials from national monuments. Therefore, the BLM must select Alternative B, which closes the quarries in the monument.

RESPONSE: Disposal typically means the sale or exchange of some commodity (lands/minerals) to the public. Materials coming from quarries would likely be "common materials" (pit-run rock or processed rock). The BLM uses these types of materials within the monument for administrative use and improvement of facilities (e.g. roads, trails, parking areas, etc.) to reduce environmental effects. Since the BLM is not selling these common materials to the public, use of these materials from the quarries could continue under the proposed plan.

MONITORING

MON-1

COMMENT: What is "effectiveness monitoring?" What type of effectiveness is the BLM monitoring?

RESPONSE: Effectiveness monitoring measures, analyzes and documents the biological effects of management treatments accomplished on the landscape. It is intended to monitor the effects expected by proposed management actions in order to see if objectives were met and to serve as feedback for future management.

Types of effectiveness monitoring vary by discipline and could be combined at project levels. For instance, in forest management projects that are thinned stand indices such as species composition over time, growth rates, density and insect and disease levels would be monitored. These are all indices of forest health and stand development. Prescribed fire monitoring would include effects of burning that use similar measurable indices that link to forest health issues. Effectiveness monitoring could then be done focusing on more than one discipline. Effectiveness monitoring protocols are available for every discipline. Further, pilot studies in the DEA examining possible management strategies might consider the balance of native versus non-native species, the abundance of noxious weeds, and the ability of desired native species to persist. The choice of variables would depend on site specific conditions and management objectives.

MON-2

COMMENT: Will spotted owl monitoring continue?

RESPONSE: Northern spotted owl monitoring will continue as funding is available.

OLD GROWTH EMPHASIS AREA

OGEA-1

COMMENT: Thinning should be used to achieve the goals of restoration and protection of monument resources; commercial incentives for resource extraction should not be part of the management plan. The proclamation constrains commercial logging, mining and development.

RESPONSE: Selective thinning will be included in specific project designs to achieve restoration and protection goals. The proposed management actions are not driven by commercial incentives. The proclamation and this plan would allow the removal of some commercial size trees from the stand "when part of an authorized science-based ecological restoration project aimed at meeting protection and old growth enhancement objectives." Commercial harvest would not be the objective. Commercial-sized material would generally stay on site to meet coarse woody debris objectives or could be used off-site for stream restoration. Material in excess of these needs may be sold commercially.

OGEA-2

COMMENT: Several comments supported commodity use and commercial extraction; commercial marketing of products produced by thinning was suggested as a way to pay for forest management and reduce the cost to the taxpayer.

RESPONSE: Some of the primary mechanisms for accomplishing restoration projects in the OGEA are service contracts, stewardship contracts, and in some cases, commercial timber sales. These mechanisms are described in the **Old-Growth Emphasis Area** section of Chapter 2. Commercial harvest of trees would not be used to pay for restoration projects.

OGEA-3

COMMENT: Some respondents were against any forest management in the monument. Other letters supported thinning and suggested a range of management strategies including:

- Thinning, only if no commercial product.
- Limited commercial thinning based on scientifically defensible standards.
- Thinning to enhance old-growth and late-successional habitat, but not too aggressively.
- Thinning in areas such as north half of the monument which has been intensively managed in the past.
- Employing a diameter limit smaller than the one in the draft plan (suggested diameter limits included 12, 14, 16 and 17 inches).
- Employing a diameter limit for thinning operations on a case-by-case basis.
- Managing forests using methods that enhances and maintains patchiness.

RESPONSE: Any thinning project would be designed to meet long-term forest health and habitat objectives at the specific site or stand level. The DEIS did not intend to imply that a specific diameter limit would be used across the monument. Establishing specific diameter limits would not meet scientifically-based criteria given the need to develop specific treatments at a stand level in order to meet historic structural and density levels. Rather, thinning projects will promote removing the suppressed understory in a manner that aims to remove small diameter trees that have been established due to the absence of fire in these stands. Most trees removed would be noncommercial size. When larger trees are removed, they would not be of old-growth character. These trees compete with and negatively affect individual (old-growth) trees or stand structure. All treatments would be designed to meet historic conditions and to maintain, promote and enhance old-growth forests.

OGEA-4

COMMENT: Some respondents supported active forest management using commercial and non-commercial means, expressing that it is a legitimate way to control fire, insects and disease.

RESPONSE: The objectives for managing the OGEA and the DEA are described their respective sections in Chapter 2. The primary goal for both emphasis areas is to maintain, protect and restore plant communities to the potential natural vegetation within the natural range of variability. All proposed treatments are designed to move the vegetation toward this goal.

OGEA-5

COMMENT: The alternatives in the draft plan for vegetation management and thinning in the OGEA are too aggressive to provide wildlife species with adequate habitat.

RESPONSE: The proposed plan treats only a small percentage of the area (22 percent) over the next decade (Table 2-2) in the OGEA. No treatments are proposed in primary spotted owl habitat. Limited pilot projects (maximum of 200 acres) may occur in late-successional forest habitat within the WUI. The majority of treatments would take place in young stands that do not currently provide habitat for late-successional species. Treatments that take place in stands that currently provide dispersal habitat for late-successional species would be designed to ensure that existing functions are not lost in an effort to improve long-term habitat conditions.

Management activities in the WUI would be designed to restore ecological integrity and to lower fire hazard through thinning and prescribed fire treatments. Treatments proposed in the reduced connectivity area (Map 8) would be designed to enhance the ecological integrity of young stands and dispersal habitat through thinning and prescribed fire treatments. Treatments in young stands would be designed to promote the development of stands that would closely pattern historic forest development.

OGEA-6

COMMENT: The DRMP/DEIS lumps conifer stringers into the southern part of the monument into OGEA, not into the non-forested habitats of the DEA that surround them. Therefore, the same management approach could be applied to these small islands of conifers surround by DEA as for entire sections of conifers in the northern part of the monument. The large scale at which conifer forest management actions are mapped in the DEIS (typically ¼ mile from good spotted owl habitat) is not appropriate in the DEA, where ¼ mile could easily encompass three or four plant communities.

RESPONSE: Conifer stands, whether located in the DEA or the OGEA, tend to suffer many of the same structural and forest health problems. Conifer stands in the DEA will be analyzed and managed in a manner consistent with historical conditions and in context with the surrounding landscape. Map 11 identifies stands with a high fire hazard rating (Appendix E) within ¼ mile of late-successional and old-growth habitat (Habitat Types 1 & 2). The existing conditions of these stands are conducive to high-intensity fire. In the event of a wildland fire, these stands may pose a risk to nearby old-growth stands as the fire spreads. Some of the mapped areas are in the DEA. Stands in the DEA have a different set of management objectives than those in the OGEA. These areas would not be treated indiscriminately to reduce fire hazard simply because of their proximity to the OGEA. Any treatments in the DEA would take place in coordination with the objectives and management considerations described in Chapter 2.

RECREATION

REC-1

COMMENT: Recreation is not specifically identified in the proclamation; it should not be promoted. Some respondents discouraged promotion of the monument and wanted to limit access; others encouraged visitor information and signage.

RESPONSE: Although the presidential proclamation makes clear that ecological protection is the primary purpose of the monument, recreational uses are not precluded by the proclamation and will continue to take place throughout the monument. The monument is part of the BLM's National Landscape Conservation System (NLCS), established to protect some of the nation's most remarkable and rugged landscapes. A key NLCS objective is to provide opportunities for the individual to explore and discover these special areas. Proposed monument management seeks to accommodate existing and future uses in a manner that balances recreation with the protection of monument resources and natural ecosystem processes.

REC-2

COMMENT: Numerous comments were submitted on off-highway vehicles (OHVs). Some comments requested that all OHVs be restricted to maintained road systems so that OHVs won't cause disrepair. Others noted that the proclamation prohibits OHV use. Others asked that OHVs be limited to specially designated roads or used with reasonable limits. One reason given for prohibiting OHVs is the difficulty of managing them as they sometimes stray from designated roads and in the process could impact sensitive soils, harm plant communities and scare wildlife.

RESPONSE: Cross-country travel by OHVs within the monument is prohibited by the presidential proclamation. OHVs are restricted to roads that are designated as open to the public for motorized access (Maps 19 and 20).

REC-3

COMMENT: Many letters regarding visitor access expressed concerns about traffic created by increased visitation in the monument. Comments supported non-mechanized, non-destructive visitor access off gravel and paved roads throughout the area.

RESPONSE: The area that is now the Cascade-Siskiyou National Monument has long been popular for recreation. Some forms of recreation in the monument were limited or curtailed by the presidential proclamation. While hunting and fishing are still allowed throughout the monument, restrictions have made some historic hunting camps and sites less accessible to motorized vehicles.

The majority of the monument is undeveloped and visitor use is estimated as light to moderate throughout the area; informal observations, however, indicate that visitation to the area has increased since monument designation. The Hyatt Lake Recreation Area receives moderate use during the months of April through October. In 2003, records show that 14,139 people visited the Hyatt Lake Recreational Complex. Visitor use would be monitored and any associated problems would be addressed through the management described in this plan.

REC-4

COMMENT: Cars should not be allowed to park off roads or outside designated parking areas.

RESPONSE: The presidential proclamation restricted motorized and mechanized travel to designated open roads. Drivers of motorized vehicles would be required to park within the road prism, preferably on hardened surfaces. Drivers should avoid parking in wet areas and should not park in areas where vegetation damage could occur easily.

REC-5

COMMENT: Special parking areas should not be developed to accommodate visitation to the monument.

RESPONSE: Additional parking areas would only be developed when needed to mitigate resource damage.

REC-6

COMMENT: "The management should make the greatest possible effort to support non-mechanized recreational activity within the monument, always consistent with protection of the unique environment or this area." Low-impact recreation, which does not destroy the ecology, should be encouraged, but not promoted, especially road-dependent recreation.

RESPONSE: The Presidential Proclamation banned off-road travel by motorized or mechanized vehicles, eliminating the popular use of OHVs to travel cross-country in the area. The monument is a part of the BLM's National Landscape Conservation System (NLCS), established to protect some of the nation's most remarkable and rugged landscapes. A key NLCS objective is to provide opportunities for the individual to explore and discover these special areas. Proposed monument management seeks to accommodate existing and future uses in a manner that balances recreation with the protection of monument resources and natural ecosystem processes.

REC-7

COMMENT: Visitor centers, additional trailheads, parking areas and other facilities promote recreation and threaten the environment. Improvements should be built only where clearly needed to reduce resource damage.

RESPONSE: Additional facilities (new trail construction, parking, toilets, trailheads, etc.) would only be constructed to mitigate resource damage. Alternatives to site development (road closures, permits, etc.) would also be considered. Implementation of management outlined in the proposed plan would strive to meet the following objectives:

- Avoid recreational improvements that detract from the monument's rugged and wild backcountry.

- Encourage visitors to use the monument's developed recreation sites. These include the Hyatt Lake Recreation Area and the Pacific Crest National Scenic Trail (PCT).
- Promote "Leave No Trace" camping and hiking methods.

REC-8

COMMENT: A specific suggestion was made to control erosion and restore vegetation on the Pilot Rock trail by rehabilitating damaged areas and constructing a new trail in an appropriate location.

RESPONSE: Currently, hikers access Pilot Rock on an unstable trail traversing the ridge west of Pilot Rock before continuing up a chute on the north side of the rock. Footing on the trail is poor, and in some places there are large areas barren of vegetation as people seek more stable footing along the sides of the trail. Surface erosion caused by runoff across exposed soils has contributed to the problem. In order to improve hiking opportunities, increase visitor education, and prevent additional resource damage from occurring in the Pilot Rock area, the following actions would be taken:

- The BLM would improve and maintain the existing Pilot Rock parking facility at the rock quarry along Pilot Rock road (40-2E-33).
- The Pilot Rock road would be closed and decommissioned beyond the quarry.
- A trail would allow access to Pilot Rock beyond the road closure.
- Interpretive and educational materials would be developed regarding the need for seasonal climbing restrictions and the safety issues associated with hiking or climbing on Pilot Rock.
- A subsequent site-specific environmental analysis in the form of an Environmental Assessment would determine a more stable access route to Pilot Rock. The analysis would consider whether the existing trail with its associated erosion problems could be stabilized, or whether the existing trail should be closed and a new route established.

REC-9

COMMENT: The BLM should be more aggressive in promoting the monument. Signs, tours and a visitor center are options for accomplishing this. Some respondents thought the interstate would be a proper site for a monument visitor center because it would capture traffic and is already an area impacted by human use and development. Others felt that the visitor center should be built at Hyatt Lake. Some recommended signs and making brochures available along major thoroughfares (and even at the airport). One suggested an interpretive sign at a scenic pullout on the Interstate 5.

RESPONSE: The Medford BLM would remain a point of contact for visitor information. Facilities could be developed within the surrounding communities for use as visitor contact stations. Exact location of these facilities would be based on availability of infrastructure, environmental site constraints, economic viability, and funding. Currently, the BLM has signed a Memorandum of Understanding with the Friends of the Cascade-Siskiyou National Monument to manage a small, self-service visitor information center located at 11470 Highway 66 (Appendix K).

REC-10

COMMENT: Many respondents support the plan's designation of the more developed area north of Highway 66 for more concentrated recreational use and restricting the less developed area south of Highway 66 for scientific research and teaching. Others felt that the separation of the monument into use and nonuse sections runs contrary to the designation of the monument as a whole and that the proposed high level of recreation and increased concentration of activity at Hyatt Lake was not justified or was to "sacrificial" of that area.

RESPONSE: Visitation to the monument is expected to increase. The north management zone (Map 4) is easily accessible and well-suited to visitation. The Hyatt Lake Recreation Area is located within this zone. The south zone (Map 4) of the monument is primarily rugged and undeveloped. The remoteness of these areas limits human disturbance on the monument's objects and natural ecosystem processes. Although these areas offer excellent opportunities for exploration and discovery, increased visitation could diminish the remote character of the area and have negative impacts on monument resources.

REC-11

COMMENT: In sum, the following were suggested for visitors:

- interpretive materials
- signs (for information and identification of private land)
- guided hikes (as an alterative to interpretive signs)
- new trails (for hiking and horses)
- information about cultural history
- educational programs on area archaeology
- programs to teach benefits of preserving land
- center and signage on Interstate 5 to capture traffic
- toilets (including at trailheads)
- volunteer programs
- handicapped accessible places (roads for vehicles with permits only)
- walk-in overnight shelter for seasonal cross-county ski and equestrian use.

RESPONSE: All of the above were considered in the development of the proposed management for recreation. With the exception of the proposal for a walk-in overnight shelter and the information center and signage on Interstate 5, each of these suggestions could take place under the proposed management. New trails for hiking and horses would only be developed to prevent resource damage.

REC-12

COMMENT: The following were suggested as ways the BLM might guard against overuse:

- discourage motorized camping
- allow backcountry camping only via permits
- consider group camping permits only with strict regulations
- install composting toilets
- limit sites for campfires
- limit horses on trails, especially when muddy
- clarify that there will not be any concessionaires
- monitor recreational use (e.g., trafic counters on particular roads such as Soda Mountain and Baldy Creek).

RESPONSE: The BLM will continue to monitor recreational use within the monument. In the event of unacceptable resource damage, certain recreational uses could be limited or prohibited. Limits can be established through the use of permit systems or group-size limits. Conversely, while limiting or prohibiting use is an effective way of preventing additional resource damage, these methods reduce opportunities for individuals to explore the monument. Law enforcement officers would be employed to ensure that laws and regulations pertaining to the protection of monument resources are followed.

REC-13

COMMENT: Recreation on public lands is spilling over into private land, particularly snowmobile, OHV use and camping, with or without campfires. The BLM should not allow such activity in mixed-ownership areas or should carefully post property boundaries.

RESPONSE: Managing recreation is a challenge due to the high percentage of private ownership across the landscape and the network of public and privately-controlled roads. In many cases, either limiting or providing public access to an area requires BLM to work with the private landowners that control sections of road throughout the monument. Due to the monument areas checkerboard ownership pattern, private lands are sometimes mistaken for monument lands and may result in inadvertent trespass on private lands. Visitor education in the form of informational brochures or flyers, interpretive or informational signs, presentations to groups or individuals, and other types of media or communication will be used.

REC-14

COMMENT: An array of comments was submitted on snowmobiles ranging from closing the entire monument to snowmobiles to allowing use only north of Highway 66 to allowing it throughout the monument. Some felt that traditional use should be allowed to continue; others believed eliminating snowmobile use in the monument was an important precedent to set from the beginning.

Most of those who favored snowmobile use wanted to see it strictly regulated. One respondent wondered whether BLM had thoroughly checked the scientific literature with regard to the effects on winter habitat needs regarding noise and intrusion on all relevant species that the monument was established to protect.

RESPONSE: Snowmobiles would be allowed on designated open roads in the north management zone. Snowmobiles would not be allowed on roads that are closed or decommissioned and cross-country travel by snowmobiles would be prohibited throughout the monument. The existing snowmobile trails (Map 25) in the north management zone enter and leave private land several times. The BLM does not have legal rights to allow the public to use these roads for winter recreation. However, the informal public use across private lands takes place at the discretion of the road owner(s) and could cease at any time, thereby limiting access to these areas.

Snowmobile use within the monument will be monitored. In the event of unacceptable resource damage, snowmobile use could be limited or prohibited. Snowmobile use in the monument is unlikely to significantly impact wildlife species. During the period of use for snowmobiles, deer, elk and many other wildlife species have moved to lower elevations or more southerly latitudes to escape the cold and snow. Species that are known to be present in the vicinity of the snowmobile trails during the period of use (e.g. northern spotted owls, great gray owls, American martens, snowshoe hares) tend to be highly mobile and are not impeded by roads or snowmobiles trails as they move through this habitat, nor highly susceptible to the intermittent noise produced as snowmobiles pass through.

REC-15

COMMENT: An array of comments was submitted on non-motorized mechanized recreation ranging from allowing it only on paved roads to allowing on roads otherwise closed to public access, to allowing it on all dirt roads and trails. Resistance was expressed to having bicycles on hiking trails, while other respondents felt that it was appropriate to restrict bicycles to "double track" and existing roads (including gated roads) to alleviate conflicts with hikers. Use of closed roads is not supported by some respondents.

RESPONSE: Non-motorized mechanized recreation use is described in the **Recreation and Visitor Services** section of Chapter 2. Cross-country travel by motorized and mechanized vehicles is prohibited throughout the monument.

Bicycles (non-motorized) would be allowed on most designated roads that are open to administrative use but otherwise closed to motorized vehicle access. Bicycles are not allowed on the Pacific Crest National Scenic Trail (PCT). Bicycles would not be allowed on roads closed by the proclamation or those roads identified for decommissioning (Map 24).

Persons requiring wheelchairs for mobility may use a motorized or mechanized wheelchair to access any area in the monument. A wheelchair refers to a device that is designed solely for use by a mobility-impaired person for locomotion and that is suitable for use in an indoor pedestrian area.

REC-16

COMMENT: Generally, there seems to be some confusion over the terms referring to bicycles: "why don't you just say it if this [non-motorized mechanized] refers to bicycles?" Respondents were unclear if bicycling will be allowed on certain roads, but prohibited from others and how this will be communicated. Also, if new roads were specifically built for bicycling, would these be roads or trails? Creating additional trails for bikers was not supported by some respondents.

RESPONSE: A section on bicycles has been added to the **Recreation and Visitor Services** section in Chapter 2. Bicycles (non-motorized) would be allowed on most designated roads that are open to administrative use but otherwise closed to motorized vehicle access. Bicycles are not allowed on the Pacific Crest National Scenic Trail (PCT). Bicycles would not be allowed on roads closed by the proclamation or those roads identified for decommissioning (Map 24).

REC-17

COMMENT: It is inaccurate to group mountain bikes together with snowmobiles and off road motorized vehicles. Bicycles do not have comparable destructive effects on trails and vegetation, nor are they as polluting. Bicycles should be allowed on decommissioned roads and other roads maintained for study and wildland fire protection.

RESPONSE: Bicycles (non-motorized) would be allowed on most designated roads that are open to administrative use but otherwise closed to motorized vehicle access. Bicycles are not allowed on the Pacific Crest National Scenic Trail (PCT). Bicycles would not be allowed on roads closed by the proclamation or those roads identified for decommissioning (Map 24).

REC-18

COMMENT: The use of recreational animal stock was supported in certain parts of the monument, but only with limits on the number allowed in a group and distance from water sources during overnights. Respondents supported requiring weed-free feed for both private and commercial stock during the time they are in the monument.

RESPONSE: Recreational animal stock use is described in the **Recreation and Visitor Services** section of Chapter 2. Recreational stock use includes the use of pack or riding animals such as horses, llamas, or goats for non-commercial uses. Cross-country recreational animal stock use would be allowed in the CSNM with the following restrictions:

- The total number of stock on overnight trips would be four animals per group.
- The total number of stock on day trips is restricted to six animals per group.
- Animals would not be allowed to overnight within 200 feet of any water's edge.
- Stock users would be encouraged to feed certified weed-free feed 24 hours prior to entering the monument.

REC-19

COMMENT: Permit horseback use throughout the monument year-round, but do not accommodate it by making it easy for horses to travel either trails or closed roads in the monument.

RESPONSE: Recreational animal stock use is permitted throughout the monument with the restrictions described in REC-19. Horseback use is not promoted. Improvements to trails or trailheads would only occur to prevent resource degradation. Clearing of trails or closed roads to allow horseback use could be authorized on a case-by-case basis when necessary to reduce or prevent impacts to monument resources.

REC-20

COMMENT: The Pacific Crest Trail Association requested that more scenic protection be afforded the trail, expanding the proposed no-cut corridor to 250 feet on either side of the trail. They also suggest that the trail be a primary access point for the monument and that it be added to all informational and interpretive materials relating to the monument. They support establishment of trailhead parking areas at all road crossings and signage consistent with their 1982 management plan.

RESPONSE: The BLM would not conduct thinning projects within 250 feet on either side of this trail. The Pacific Crest National Scenic Trail is highlighted throughout this plan as a key recreational feature in the area. Many of the BLM's informational and interpretive materials related to the monument highlight this trail.

REC-21

COMMENT: The State of Oregon Historic Trails Advisory Council advises providing appropriate recognition and developmental considerations for the Applegate branch of the California National Historic Trail and the Ewing Young Route State Historic Trail.

RESPONSE: The National Historic Trails within the monument are described in the **General Management** section of Chapter 2.

REC-22

COMMENT: Vehicle access to the Parsnip Lakes area should be allowed only on the first four lakes nearest Highway 66. Disability access should be provided to one Parsnip Lake, to Little Hyatt Lake and to dock facilities at Hyatt Lake. A trail around Hyatt Lake was also recommended.

RESPONSE: These kinds of proposals may be compatible with the proposed plan but would require site-specific evaluation at a later date. The Little Hyatt Lake is not located within the monument.

REC-23

COMMENT: The plan should address rock climbing. It is consistent with values appropriate to the monument. The BLM should preserve climbing opportunities and conserve the climbing environment at the monument.

RESPONSE: Climbing opportunities are addressed in the **Recreation and Visitor Services** section of Chapter 2. In order to protect natural geologic features and vegetation such as lichens and mosses, technical rock climbing would not be allowed within the CSNM, except on Pilot Rock. Rock climbing on Pilot Rock would be subject to the following restrictions. The south face of Pilot Rock provides some of the best technical climbing opportunities in southwestern Oregon. There are seven recorded technical routes on Pilot Rock. To date, fixed anchors have been placed very conservatively on the four Pilot Rock routes requiring them. New fixed anchors could be established on a limited basis to the extent that they do not detract from the geologic resource or impair the quality of the current climbing experience. Bolts needed for fixed anchors may only be installed using a non-mechanized hand drill and hammer.

In order to better protect the peregrine falcons at Pilot Rock and to help ensure nest productivity, a seasonal climbing closure would prohibit climbing activities on the south and east sides of Pilot Rock from February 1 to July 30 each year. No permit system for climbing would be established at this time. However, use would be monitored and a climbing management plan may be necessary if the seasonal closure is violated or resource damage occurs. A plan for monitoring the peregrine falcon nest site is detailed in Appendix J.

REC-24

COMMENT: Two other recreational uses of the monument mentioned: birding and hang gliding. Although no specific recommendations were given related to birding, it was requested that hang gliding be restricted to permit holders and to specific sites and hang gliding off Boccard point be prohibited.

RESPONSE: Hang gliding and para-sailing/gliding would be allowed only in designated areas and by permit only. The designated area would be determined by the monument staff through an analysis process after an application is received and the decision is made to permit the activity. These activities would not be allowed on Pilot Rock.

REC-25

COMMENT: Visual resource management should be discussed in the plan.

RESPONSE: Visual resource management is discussed in the **General Management** section of Chapter 2.

REC-26

COMMENT: Restrict all competitive events and "a-thons" to roads north of and including Highway 66 that were paved at the time of monument designation.

RESPONSE: A Special Recreation Permit (SRP) is required for competitive and/or commercial recreational uses on BLM lands. The issuance of a SRP is a discretionary action. Applications for any competitive event or "a-thon" would be reviewed on a case-by-case basis to determine whether the proposed activity is consistent with the protection of monument resources. Special Recreation Permits are described in detail in the **Recreation and Visitor Services** section of Chapter 2.

REC-27

COMMENT: Map 42 of the DRMP/DEIS shows selected areas of the monument designated as "Primary Recreation Use Zones" and Table S-1 refers to these as "recreation concentration zones." Scattered references in the DEIS indicate that these zones are places where the monument is receiving relatively heavy public recreational use now. Highlighting these areas will direct even more recreational use and will not help protect the resources of those areas.

RESPONSE: The "Primary Recreation Use Zones" have been eliminated from the proposed plan. The proposed plan divides the monument into two management zones (Map 4) to facilitate discussion of management actions that are not necessarily related to vegetation management (such as recreational activities and visitor facilities). The northern portion of the monument is easily accessible and well-suited to visitation. The south zone of the monument is primarily rugged and undeveloped.

REC-28

COMMENT: The DRMP/DEIS makes no convincing case for banning hiking in the RNAs under Alternatives B, C, and D. The DRMP/DEIS provides no justification for restricting the minor amount of public visitation these out-of-the-way locations will receive.

RESPONSE: The RNA plans have been modified to allow hiking in these areas. Groups larger than 25 would be required to contact monument staff for information on ways to mitigate possible resource damage in sensitive areas.

REC-29

COMMENT: What is an "administrative purpose" as related to group camping? Who might carry out such purposes and in what ways?

RESPONSE: The proposed plan limits group camping to 12 within the south management zone (Map 4). Group camping in excess of 12 in the south zone could be allowed for administrative purposes as long as the activity does not interfere with the protection of monument objects or resources. Administrative purposes may include authorized research, survey crews, fire crews, or other authorized tasks requiring an overnight stay in the monument.

SPECIAL FOREST PRODUCTS

SFP-1

COMMENT: The term "special forest products" is vague in the effects/environmental consequences section.

RESPONSE: Special forest products include such things as the collection of berries, nuts, mushrooms, or fruits; firewood gathering; and collections authorized by permit for research and management activities. The proclamation specifically prohibits the removal of monument features. Management of special forest products is described in the **General Management** section of Chapter 2.

SFP-2

COMMENT: Collection of rocks and gems with hand tools for personal use should be allowed in specified areas.

RESPONSE: The proclamation specifically prohibits the removal of monument features. The removal of features includes, but is not limited to, the collection of any monument resources such as rocks, petrified wood, fossils, archaeological and cultural items, plants and parts of plants, fish and animals not regulated by ODFW, insects or other invertebrate animals, bones, waste, or other products from animals. In the process of developing this plan, the BLM considered identifying pre-designated rock and gem collecting areas for educational purposes as long as the collection did not interfere with protection of monument resources. The BLM was unable to locate a suitable area that would impact monument resources.

SFP-3

COMMENT: Mushroom hunting should be allowed in the monument.

RESPONSE: Mushroom collection for personal non-commercial use, not to exceed one gallon per day, is authorized within the monument.

WATER RESOURCES

WAT-1

COMMENT: The BLM should take timely and appropriate steps to protect the water rights associated with the monument. Such steps could include the following:

1. Participate in any general stream adjudication affecting the CSNM to ensure that water rights claims are filed with the state and protected.
2. Monitor and become apprised of any new or proposed water developments that could threaten water supplies in the monument.
3. Acquire rights under federal reserve water rights doctrine to appropriate instream peak flows from upstream users (e.g. on Keene Creek) that provide instream structures (large woody components) to bring stream channels back into contact with their floodplains so that stream margin wetlands can reestablish.

RESPONSE: The BLM intends to determine the quantity of water needed to fulfill the purposes for which the monument was established. Once the quantity of water is known, the BLM will assert its federal reserved water rights as established by the proclamation.

WAT-2

COMMENT: Protect water quality, including springs, seeps, creeks, and riparian areas. Streams should be restored to their natural hydrologic function.

RESPONSE: The proposed management plan strives to protect water quality, including springs, seeps, streams, and riparian areas within the monument through the implementation of riparian reserves, the Aquatic Conservation Strategy, and best management practices. Proposed restoration projects such as road decommissioning and drainage improvement would aid in efforts to restore natural hydrologic function for stream systems. Protection and enhancement of hydrologic function, aquatic connectivity, and water quality is one of the primary management objectives for riparian areas. The **Riparian Areas and Aquatic Resources** section of Chapter 2 describes in detail the proposed management for riparian areas within the monument.

WILDERNESS STUDY AREAS

WSA-1

COMMENT: The monument should include the 23,000 acres of Soda Mountain backcountry in the southern part. It should be protected and restored to retain its suitability for future Congressional wilderness designation.

RESPONSE: Most of this area falls within the DEA. The main goal of DEA management is to maintain, protect, and restore habitat and ecological processes critical to the richness and abundance of the objects of biological interest for which the monument was proclaimed. The pilot studies will not detract from the character of this backcountry area.

WSA-2

COMMENT: The monument should not include the 23,000 acres of Soda Mountain backcountry in the southern part.

RESPONSE: The federal lands that encompass the CSNM were reserved in the presidential proclamation. Adjusting those boundaries is outside the scope of this plan.

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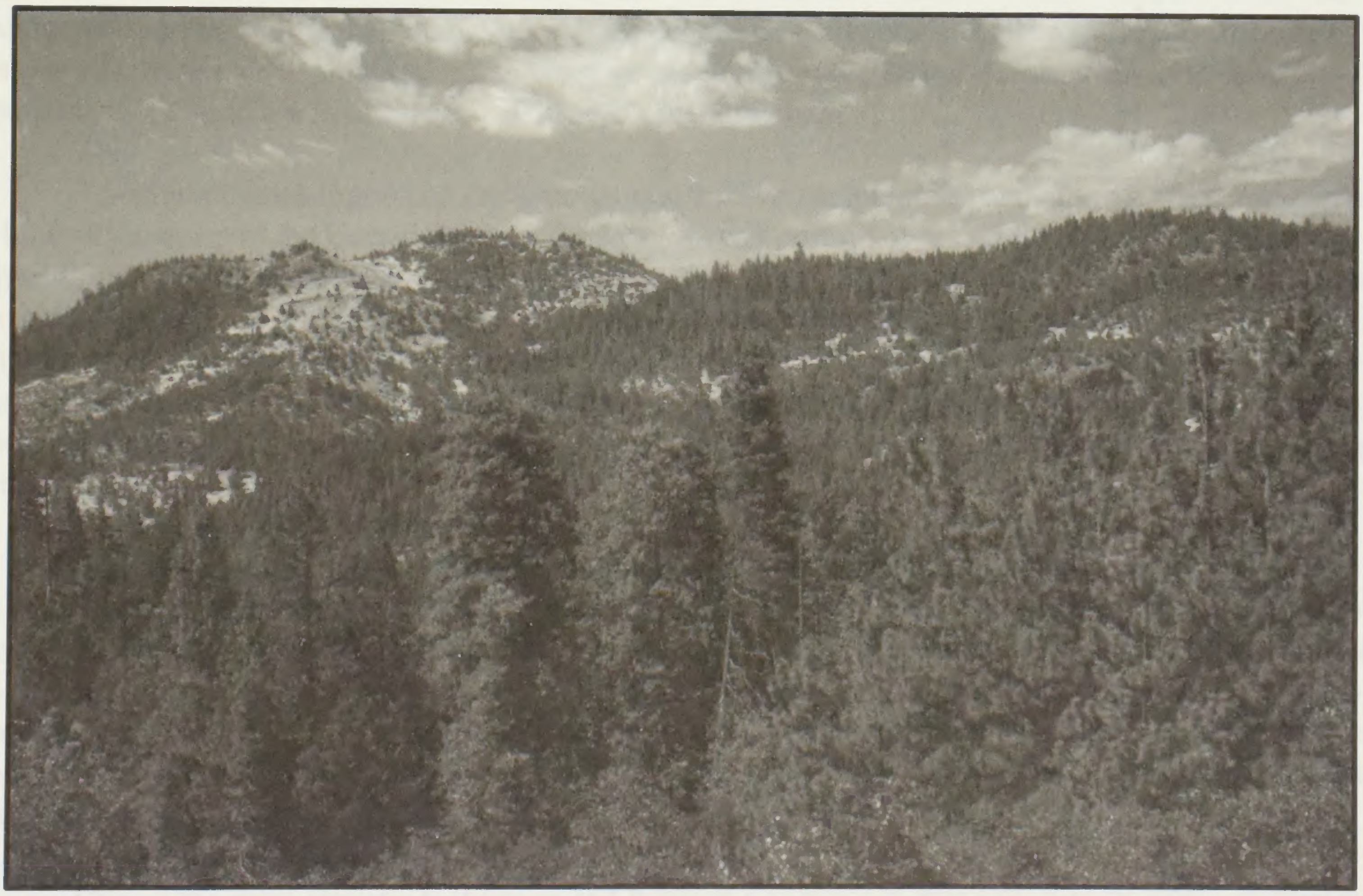
Appendices



APPENDIX A

Presidential Proclamation

June 9, 2000

ESTABLISHMENT OF THE CASCADE-SISKIYOU NATIONAL MONUMENT BY THE PRESIDENT OF THE UNITED STATES OF AMERICA

A PROCLAMATION

With towering fir forests, sunlit oak groves, wildflower-strewn meadows, and steep canyons, the Cascade-Siskiyou National Monument is an ecological wonder, with biological diversity unmatched in the Cascade Range. This rich enclave of natural resources is a biological crossroads -- the interface of the Cascade, Klamath, and Siskiyou ecoregions, in an area of unique geology, biology, climate, and topography.

The monument is home to a spectacular variety of rare and beautiful species of plants and animals, whose survival in this region depends upon its continued ecological integrity. Plant communities present a rich mosaic of grass and shrublands, Garry and California black oak woodlands, juniper scablands, mixed conifer and white fir forests, and wet meadows. Stream bottoms support broad-leaf deciduous riparian trees and shrubs. Special plant communities include rosaceous chaparral and oak-juniper woodlands. The monument also contains many rare and endemic plants, such as Greene's Mariposa lily, Gentner's fritillary, and Bellinger's meadowfoam.

The monument supports an exceptional range of fauna, including one of the highest diversities of butterfly species in the United States. The Jenny Creek portion of the monument is a significant center of fresh water snail diversity, and is home to three endemic fish species, including a long-isolated stock of redband trout. The monument contains important populations of small mammals, reptile and amphibian species, and ungulates, including important winter habitat for deer. It also contains old growth habitat crucial to the threatened Northern spotted owl and numerous other bird species such as the western bluebird, the western meadowlark, the pileated woodpecker, the flammulated owl, and the pygmy nuthatch.

The monument's geology contributes substantially to its spectacular biological diversity. The majority of the monument is within the Cascade Mountain Range. The western edge of the monument lies within the older Klamath Mountain geologic province. The dynamic plate tectonics of the area, and the mixing of igneous, metamorphic, and sedimentary geological formations, have resulted in diverse lithologies and soils. Along with periods of geological isolation and a range of environmental conditions, the complex geologic history of the area has been instrumental in producing the diverse vegetative and biological richness seen today.

One of the most striking features of the Western Cascades in this area is Pilot Rock, located near the southern boundary of the monument. The rock is a volcanic plug, a remnant of a feeder vent left after a volcano eroded away, leaving an out-standing example of the inside of a volcano. Pilot Rock has sheer, vertical basalt faces up to 400 feet above the talus slope at its base, with classic columnar jointing created by the cooling of its andesite composition.

The Siskiyou Pass in the southwest corner of the monument contains portions of the Oregon/California Trail, the region's main north/south travel route first established by Native Americans in prehistoric times, and used by Peter Skene Ogden in his 1827 exploration for the Hudson's Bay Company.

Section 2 of the Act of June 8, 1906 (34 Stat. 225, 16 U.S.C. 43 1), authorizes the President, in his discretion, to declare by public proclamation historic landmarks, historic and prehistoric structures, and other objects of historic or scientific interest that are situated upon the lands owned or controlled by the Government of the United States to be national monuments, and to reserve as a part thereof parcels of land, the limits of which in all cases shall be confined to the smallest area compatible with the proper care and management of the objects to be protected.

WHEREAS it appears that it would be in the public interest to reserve such lands as a national monument to be known as the Cascade-Siskiyou National Monument:

NOW, THEREFORE, I, WILLIAM J. CLINTON, President of the United States of America, by the authority vested in me by section 2 of the Act of June 8, 1906 (34 Stat. 225, 16 U.S.C. 43 1), do proclaim that there are hereby set apart and reserved as the Cascade-Siskiyou National Monument, for the purpose of protecting the objects identified above, all lands and interests in lands owned or controlled by the United States within the boundaries of the area described on the map entitled "Cascade-Siskiyou National Monument" attached to and forming a part of this proclamation. The Federal land and interests in land reserved consist of approximately 52,000 acres, which is the smallest area compatible with the proper care and management of the objects to be protected.

All Federal lands and interests in lands within the boundaries of this monument are hereby appropriated and withdrawn from all forms of entry, location, selection, sale, or leasing or other disposition under the public land laws, including but not limited to withdrawal from location, entry, and patent under the mining laws, and from disposition under all laws relating to mineral and geothermal leasing, other than by exchange that furthers the protective purposes of the monument.

There is hereby reserved, as of the date of this proclamation and subject to valid existing rights, a quantity of water sufficient to fulfill the purposes for which this monument is established. Nothing in this reservation shall be construed as a relinquishment or reduction of any water use or rights reserved or appropriated by the United States on or before the date of this proclamation.

The commercial harvest of timber or other vegetative material is prohibited, except when part of an authorized science-based ecological restoration project aimed at meeting protection and old growth enhancement objectives. Any such project must be consistent with the purposes of this proclamation. No portion of the monument shall be considered to be suited for timber production, and no part of the monument shall be used in a calculation or provision of a sustained yield of timber. Removal of trees from within the monument area may take place only if clearly needed for ecological restoration and maintenance or public safety.

For the purpose of protecting the objects identified above, the Secretary of the Interior shall prohibit all motorized and mechanized vehicle use off road and shall close the Schoheim Road, except for emergency or authorized administrative purposes.

Lands and interests in lands within the monument not owned by the United States shall be reserved as a part of the monument upon acquisition of title thereto by the United States.

The Secretary of the Interior shall manage the monument through the Bureau of Land Management, pursuant to applicable legal authorities (including, where applicable, the Act of August 28, 1937, as amended (43 U.S.C. 11 8 la-1 18 lj)), to implement the purposes of this proclamation.

The Secretary of the Interior shall prepare, within 3 years of this date, a management plan for this monument, and shall promulgate such regulations for its management as he deems appropriate. The management plan shall include appropriate transportation planning that addresses the actions, including road closures or travel restrictions, necessary to protect the objects identified in this proclamation.

The Secretary of the Interior shall study the impacts of livestock grazing on the objects of biological interest in the monument with specific attention to sustaining the natural ecosystem dynamics. Existing authorized permits or leases may continue with appropriate terms and conditions under existing laws and regulations. Should grazing be found incompatible with protecting the objects of biological interest, the Secretary shall retire the grazing allotments pursuant to the processes of applicable law. Should grazing permits or leases be relinquished by existing holders, the Secretary shall not reallocate the forage available under such permits or for livestock grazing purposes unless the Secretary specifically finds, pending the outcome of the study, that such reallocation will advance the purposes of the proclamation.

The establishment of this monument is subject to valid existing rights.

Nothing in this proclamation shall be deemed to enlarge or diminish the jurisdiction of the State of Oregon with respect to fish and wildlife management.

Nothing in this proclamation shall be deemed to revoke any existing withdrawal, reservation, or appropriation; however, the national monument shall be the dominant reservation.

Warning is hereby given to all unauthorized persons not to appropriate, injure, destroy, or remove any feature of this monument and not to locate or settle upon any of the lands thereof.

IN WITNESS WHEREOF, I have hereunto set my hand this ninth day of June, in the year of our Lord two thousand, and of the Independence of the United States of America the two hundred and twenty-fourth.

WILLIAM J. CLINTON

APPENDIX B

Antiquities Act of 1906

Act of June 18, 1906, 16 U.S.C. 431-433 (Popularly known as the Antiquities Act of 1906)

The following is the text of the Antiquities Act of 1906, under the authority of which President Clinton established Grand Staircase-Escalante National Monument.

16 U.S.C. § 431 National monuments; reservation of lands; relinquishment of private claims:

The President of the United States is authorized, in his discretion, to declare by public proclamation historic landmarks, historic and prehistoric structures, and other objects of historic or scientific interest that are situated upon the lands owned or controlled by the Government of the United States to be national monuments, and may reserve as a part thereof parcels of land, the limits of which in all cases shall be confined to the smallest area compatible with the proper care and management of the objects to be protected. When such objects are situated upon a tract covered by a bona fide unperfected claim or held in private ownership, the tract, or so much thereof as may be necessary for the proper care and management of the object, may be relinquished to the Government, and the Secretary of the Interior is authorized to accept the relinquishment of such tracts in behalf of the Government of the United States.

16 U.S.C § 431a Limitation on further extension or establishment of national monuments in Wyoming:

No further extension or establishment of national monuments in Wyoming may be undertaken except by express authorization of Congress.

APPENDIX C

Implementation, Monitoring, and Adaptive Management Framework

INTRODUCTION

This appendix is intended to serve as a framework to guide implementation, monitoring, and adaptive management for the proposed plan. It is anticipated that further refinements of this process will be necessary as the implementation process proceeds.

REFINING LANDSCAPE DECISIONS AND INFORMATION TO SITE-SPECIFIC LEVELS

The proposed plan contains general direction and context for the Cascade-Siskiyou National Monument (CSNM) and makes decisions on specific actions for some issues. Many management actions necessary to achieve landscape objectives (e.g., forest restoration treatments, livestock management) will require further analysis and additional decisions. This additional analysis would:

- Validate, refine, or add to information concerning current and historical resource conditions;
- Address issues not appropriately addressed at the landscape scale;
- Prioritize efforts to maximize the likelihood of meeting management goals and objectives;
- Guide the type, location, and sequence of appropriate management activities; and
- Identify monitoring and research needs.

This section provides an outline of the expected types and levels of analysis and planning that would refine landscape information and decisions in the plan to site-specific actions. This process is designed to ensure that landscape decisions are viewed within the context of site-specific conditions, and that site-specific decisions are made within the context of landscape goals and objectives.

Hierarchy of Analysis

Several steps are envisioned to implement the landscape-level decisions made in this plan. While these steps may occur sequentially, it is likely that they would occur simultaneously since the need for further assessment before project implementation varies in different areas. The proposed monument plan reviews the information at the larger landscape scale and sets the context and priorities for subsequent planning and decisions at the following finer scales.

- *Subwatershed Analysis*: This type of assessment identifies priority areas and actions at the 6th field subwatershed scale that are necessary to achieve overall plan objectives. Such assessments would provide the context for site-scale planning and actions to implement decisions, and focus on interpreting existing information and trends and identifying information gaps. Such analysis would also help refine overall objectives and would characterize the situation and trends in relation to the desired future condition. If necessary, the assessment would set the stage for identifying the management necessary to move towards desired future conditions.

- *Site-specific analysis*: Based on the landscape objectives in the proposed plan and on the subwatershed analysis, finer-scale, site-specific planning and analysis will be completed in order to implement decisions.

Compliance with the National Environmental Policy Act

The Final Environmental Impact Statement (FEIS) for the monument plan provides the compliance with the National Environmental Policy Act (NEPA) for the landscape and site-specific decisions that will be made in the Record of Decision. In most cases, additional site-specific analysis will be needed for implementation actions. The BLM would continue to conduct the appropriate level of environmental analysis as part of the planning and decision making processes described above.

FRAMEWORK FOR MONITORING, EVALUATION, AND ADAPTIVE MANAGEMENT

Adaptive management, as defined here, is a process for continually improving management actions and policies by learning from the outcomes of operational programs and new scientific information. Using adaptive management, plans and activities are treated as "works-in-progress" rather than final solutions to complex problems. The process generally includes four phases: planning, implementation, monitoring, and evaluation (Figure A-1). The planning and implementation phases are discussed above. This section focuses on monitoring and evaluation, which would lead to changes in planning and implementation activities.

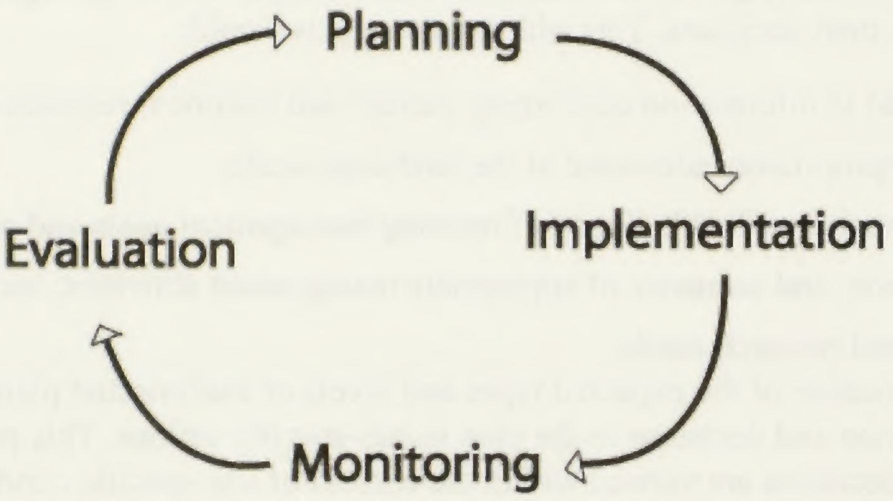


Figure A-1

This section provides a framework for developing a specific monitoring and evaluation program which would measure the conditions and trends in the monument. The information developed through the monitoring process would be used to assess management strategies, alter decisions, change implementation, or maintain current management direction.

Monitoring

An initial step in developing a monitoring program is to define the questions which need to be answered in order to evaluate the attainment of landscape management goals and objectives in the plan. These questions can be used to develop a monitoring strategy on appropriate issues and avoid gathering information that has limited value. Ongoing and proposed monitoring projects are detailed in Appendix J. Additional monitoring projects would be developed as part of the adaptive management process.

Monitoring results will provide managers with the information to determine whether an objective has been met, and whether to continue or modify the management direction. Findings obtained through monitoring, research, and other new information, will provide a basis for changing monument management. The monitoring strategy will be periodically evaluated to ensure that the monitoring questions and standards are still relevant. Adjustment to the monitoring strategy will be made as appropriate. Some monitoring items may be discontinued and others may be added as knowledge and issues change with implementation. Priorities will be given for monitoring mandated by executive order or legislation.

Determining the specific monitoring approach for any question depends on knowledge of detailed information on existing conditions. For example, trend assessment requires first gathering baseline or status information. The collection of baseline information is currently being conducted in the monument. Landscape scale vegetation assessments, range utilization transects, archaeology inventories, surveys and monitoring for special status species, and visitor use inventories are just a few of the multi-year projects that have occurred or are continuing within the monument. Data from these projects are integral to monitoring trends. Monitoring strategies must also identify other techniques (remote sensing, sample-based studies, modeling) that may be necessary to get a complete picture of structure and pattern of monument resources. Successful implementation of large-scale monitoring may require a combination of approaches.

The monitoring process will collect information in the most cost effective manner possible, and may involve sampling or remote sensing. Monitoring could be cost prohibitive if not designed carefully. Therefore, it will not be necessary or desirable to monitor every management action or direction. Unnecessary detail and unacceptable costs will be avoided by focusing on key monitoring questions and proper sampling methods. The level and intensity of monitoring will vary, depending on the sensitivity of the resource, process or trend and the scope of the proposed management activity.
As mentioned above, the design of the monitoring program would allow flexibility to add data collection needs identified through the assessments and planning processes. Monument assessments and planning, however, should also incorporate monitoring and evaluation information to ensure that the latest information is used in management actions.

Evaluation

Evaluation is the next key component of the adaptive management process. Evaluation is the process in which the plan and monitoring data are reviewed to see if management goals and objectives are being met and if management direction is sound. This portion of the adaptive management strategy examines the monitoring data and uses it to draw conclusions on whether management actions are meeting stated goals and objectives and, if not, why. The conclusions are used to make recommendations on whether to continue current management strategies or to make changes in management practices to meet plan goals and objectives.

Formal plan evaluation will occur at about 5-year intervals and evaluate:

1. Whether management actions are resulting in satisfactory progress toward objectives;
2. Whether actions are consistent with current policy;
3. Whether original assumptions were correctly applied and impacts correctly predicted;
4. Whether mitigation measures are satisfactory;
5. Whether the RMP is consistent with the plans and policies of state and local government, other federal agencies and Indian Tribes;
6. Whether new data are available that would require alteration of the plan; and
7. Whether the RMP is still valid or needs to be amended or revised.

Adaptive Management

The evaluation process discussed above would generate new information for incorporation into management actions. Ongoing assessments and integrated activity planning would also uncover new information that can be used to make changes to projects, strategies, objectives, and monitoring elements. New information may result in any of the following:

- Concluding that management actions are moving the landscape towards the plan objectives.
- Concluding that further research needs to be initiated or actions need to be adjusted to achieve landscape objectives. If new information or research demonstrates better ways to achieve plan objectives, changes in activity planning and project implementation can be made (i.e., plan maintenance). Depending upon the nature of the management changes, NEPA analysis may be required.
- Concluding that landscape objectives should be altered based on new information. If the new information indicates reconsideration of plan objectives, a plan amendment could be considered to re-examine targeted future conditions and the means to reach those conditions.

Role of the Monument Staff

The monument technical staff is responsible for developing monitoring and adaptive management protocols and ensuring that documentation is sufficient to facilitate feedback into the adaptive management process. These specialists, representing the major land management disciplines (e.g. botany, fisheries, hydrology, ecology, wildlife, range, forestry, and recreation) are responsible for ensuring that monitoring results and other new information are compiled, evaluated, and incorporated into future rounds of planning and implementation.

The credibility of an adaptive management process rests in part on the routine application of an outside check on the use of technical and scientific information, including monitoring. Independent reviews and partnerships with outside groups (e.g. Oregon State University; U.S. Fish and Wildlife Service) can provide verification that plans, evaluation and changes in management strategies are consistent with current scientific concepts. In addition, collaboration with the local communities, monument interest groups, and users of the monument ensure credibility and the success of managing the unique elements of the CSNM.

APPENDIX D

Conservation Measures for ESA Species

Table D-1. Conservation Measures for Listed Species

ACTIVITY	LISTED SPECIES		
Tree Harvest	**Bald Eagle**	**Northern Spotted Owl**	**Gentner's Fritillary**
Timber harvest (includes tree salvage)/ large tree thinning /oak woodland restoration	• No harvest of eagle nest, perch, or roost trees. • No eagle habitat removal within ½ mile of nests/roosts. • No suitable/potential perches removed within ½ mile of nests/roosts—public safety is an exception (see Hazard Tree Removal below). • No work or other activities above ambient levels permitted within ¼ mile of active nests/roosts (non line-of-sight), or ½ mile (line-of-site) from January 1- August 31 (nesting season) and November 15 – March 15 (winter roosting). • No blasting within 1 mile of active nest sites from January 1–August 31.	• No work activities that produce noise above ambient levels are permitted within specified distances (see below) of active or unsurveyed nest and activity centers between March 1 and June 30, or until 2 weeks after fledging. Examples of activities and restricted distances: • Blasting (> 2# explosive – 1 mi.) • Blasting (< 2# explosive – 360 ft • Helicopters/Planes – 360 ft. • Chainsaws – 195 ft. • Jackhammers – 180 ft. • Heavy Equipment – 105 ft. • Restrictions can be waived if protocol surveys show non-nesting or failed nesting.	• Pre-decisional surveys required. • 25-foot radius no activity buffer around occurrence boundary. • 100-foot no equipment buffer around occurrence boundary. • No new landings within 300 feet of known sites. • Use of existing landing within 100 feet of known sites not allowed. • Manual treatment through buffers allowed if canopy retention over plants is greater than 40% and during the dormant period (August–February). • Cut material piled outside buffers.
Hazard Tree Removal	See tree harvest restrictions. However, if necessary, restrictions can be waived to provide for public safety. Waiver requires Level 1 Team review.	See tree harvest restrictions. However, if necessary, restrictions can be waived to provide for public safety.	None – site specific conservation measures discretionary.

Table D-1. Conservation Measures for Listed Species

ACTIVITY	LISTED SPECIES		
Vegetation Management	**Bald Eagle**	**Northern Spotted Owl**	**Gentner's Fritillary**
Young stand and understory thinning.	See tree harvest restrictions.	See tree harvest restrictions.	• Pre-decisional surveys if more than 5 years since last survey. • 25-foot buffers. • Manual treatment allowed in buffers if canopy retention greater than 40% and during the dormant period (August – February). • 100-foot no equipment buffer.
Gopher trapping	See tree harvest restrictions.	See tree harvest restrictions.	No trapping within 25-foot buffers.
Mechanical thinning / brushing or heavy equipment.	See tree harvest restrictions.	See tree harvest restrictions.	100-foot no equipment buffer.
Tree Planting	See tree harvest restrictions.	See tree harvest restrictions.	No tree planting within 100 feet of occurrence boundary.
Hand Pruning	See tree harvest restrictions.	See tree harvest restrictions.	Allowed through buffered sites, remove material from buffer.
Fertilizing	See tree harvest restrictions.	See tree harvest restrictions.	No fertilization within 50 feet of buffered occurrences.
Special Forest Products			
SFP Collections	See tree harvest restrictions.	See tree harvest restrictions.	No SFP collection within known sites (25 feet).
Watershed Restoration			
Blasting and low level air-operations	See tree harvest restrictions.	See tree harvest restrictions.	See culvert installation/replacement below.
Culvert installation/ replacement	See tree harvest restrictions.	See tree harvest restrictions.	• Survey suitable, intact habitat and protect occurrence by site specific mitigation. • Surveys of previously disturbed sites within the prism and cut-bank inlet and fill outlet are not required.
In-stream work and equipment	See tree harvest restrictions.	See tree harvest restrictions.	• Survey suitable habitat in equipment access corridors. • Buffer known sites by 100 feet.

Table D-1. Conservation Measures for Listed Species

ACTIVITY	LISTED SPECIES		
Fuels Management	**Bald Eagle**	**Northern Spotted Owl**	**Gentner's Fritillary**
(Includes air operations, slashing, prescribed burning)	• See tree harvest restrictions. • Burning or air operations will not take place within ½ mile of active eagle nests/roosts from January 1-August 31 (nests) and November 15-March 15 (roosts). • When burning within 1 mile of an active nest/roost, ensure that the prescription incorporates smoke management goals.	• See tree harvest restrictions. • Broadcast burning will not take place within ¼ mile of active nests from March 1-June 30 or until two weeks after fledging. • Helicopter operations over suitable NSO habitat will be greater than 360 feet above ground level.	• Minimum 25-foot no-treatment buffer for fuels treatments. • Hand slashing (chain/brush saws) during the dormant period allowed if a minimum of 40% canopy cover retained. If canopy already less than 40%, then no treatment in the buffer is needed. • Remove cut slash from the 25-foot buffer and place 25 feet from the buffer edge. No slash piling or burning within 50 feet of the occurrence. • Broadcast burning through buffers allowed during the dormant period (August-February). • No mechanical treatments within 100 feet of occurrence; 100-foot buffer required.

Table D-1. Conservation Measures for Listed Species

ACTIVITY	LISTED SPECIES		
Wildland Fire	**Bald Eagle**	**Northern Spotted Owl**	**Gentner's Fritillary**
	• Minimize noise disturbance from January 1 - August 31 within 1 mile of active nests. • Minimize repeated aircraft flights over nests when the flights are less than 1,500 feet above ground level. • Do not fly over nest sites with buckets (except to protect the nest). • Minimize use of explosives within 1 air mile of nests. • Place camps and staging areas over a mile from nest sites prior to August 31. • Make available to line officers and incident commanders all information on listed species to minimize impacts and protect sites when possible. • If implementation of conservation measures causes human safety risks, then implementation is discretionary and emergency consultation may be required.	• Minimize noise disturbance from March 1– June 30 within 360 feet of occupied stands. • Minimize repeated aircraft flights less than 360 feet above ground level. • Minimize use of explosives within 1 air mile of nests. • Make available to line officers and incident commanders all information on listed species locations to minimize impacts and protect sites when possible. • If implementation of conservation measures causes human safety risks, then implementation is discretionary and emergency consultation may be required.	• Protect known sites occurrences from high severity fire and ground disturbing activities (line building) if possible. • Make available to line officers and incident commanders all information on listed species locations to minimize impacts and protect sites when possible. • If implementation of conservation measures causes human safety risks, then implementation is discretionary and emergency consultation may be required.

Table D-1. Conservation Measures for Listed Species

ACTIVITY	LISTED SPECIES		
Recreation	**Bald Eagle**	**Northern Spotted Owl**	**Gentner's Fritillary**
New recreation facilities construction and trail construction	Do not construct facilities or trails within ½ mile of active nests or roosts.	See tree harvest restrictions above.	• Surveys of suitable habitat. • Protect occurrences with 100 foot buffers.
Recreation maintenance (including trail maintenance, brushing, signing, post holes)	See tree harvest restrictions above.	See tree harvest restrictions above.	• No surveys required. • Develop site specific conservation measures to protect known sites.
Recreation use	Restrict picnicking, camping, firearm use, and low level aircraft operations within ½ mile of active nests and roosts from January 1- August 31 (nests) and November 15-March 15 (roosts).	None.	None required – if possible, monitor sites and develop site specific conservation measures to protect known sites.
Livestock Grazing			
Existing permitted grazing	None.	None.	Monitor sites and develop site specific conservation measures to protect known sites.
Allotment renewals / new permits & allotments	None.	None.	Pre-decisional surveys and implementation of site specific protection measures (e.g., change timing, intensity, duration, or fence populations).

Table D-1. Conservation Measures for Listed Species

ACTIVITY	LISTED SPECIES		
Road/Engineering	**Bald Eagle**	**Northern Spotted Owl**	**Gentner's Fritillary**
Road construction	See tree harvest restrictions.	See tree harvest restrictions.	• Pre-disturbance surveys of suitable habitat. • 100-foot buffer for existing sites.
Road maintenance	See tree harvest restrictions.	See tree harvest restrictions.	• No pre-disturbance surveys. • Protect known sites on road edge with site specific mitigation.
Decommissioning	See tree harvest restrictions.	See tree harvest restrictions.	• Disturbance within the road prism – no surveys. • Disturbance outside the road prism.
Road Use & Special Use Permits			
ROW & Road use permits	Consult on individual projects if there is a "may affect" determination.	Consult on individual projects if there is a "may affect" determination.	None
Special uses – Facilities construction	Consult on individual projects if there is a "may affect" determination.	See tree harvest restrictions above	• Survey suitable intact habitat. • Protect occurrences by 100 foot no-activity buffer.
Special uses - Maintenance	See tree harvest restrictions.	See tree harvest restrictions.	• No surveys. • Protect known sites by site specific conservation measures.
Research collection permits	Collection permit from USFWS required	Collection permit from USFWS required.	Collection permit from USFWS required.
Quarry/Rock Pits			
New quarries & development of existing quarries	See tree harvest restrictions.	See tree harvest restrictions.	• Survey suitable habitat for quarry development. • Protect sites by a 100-foot buffer.
Quarry reclamation	See tree harvest restrictions.	See tree harvest restrictions.	• Surveys if intact suitable habitat affected; no surveys required within the disturbed quarry.

Table D-1. Conservation Measures for Listed Species

ACTIVITY	LISTED SPECIES		
Cultural Resources	**Bald Eagle**	**Northern Spotted Owl**	**Gentner's Fritillary**
	See tree harvest restrictions.	See tree harvest restrictions.	• Areas proposed for excavation in suitable habitat must be surveyed and occupied sites identified. • No digging of plants allowed.
Noxious Weed Control			
Roadside weeds	See tree harvest restrictions.	None.	• No surveys required within the previously disturbed road prism (cut-slope, bed, & fill slope). • Protect known sites and individual plants from weed treatments.
Non-roadside	See tree harvest restrictions.	See tree harvest restrictions.	• Survey suitable habitat. • 25-foot buffers. • Manual treatments (hand pulling, hot foam, chemical wicking) allowed in buffered occurrences only on individual weeds. • No spot spraying within 25-foot buffer. • Reseed with native species at density appropriate for the location.

APPENDIX E

Wildland Fire Occurrence and Risk Assessment

OVERVIEW

This appendix explains some of the different variables and tools used throughout the planning process to help determine the role that fire has played in shaping the monument's ecosystem, the effects of fire exclusion and other human influences on the ecosystem, and the degree to which fire hazard has been elevated across the landscape and the risk this poses to monument and human resources. These variables are listed below and are discussed in more detail in the remainder of this appendix:

- Wildland fire history
- Fire suppression data
- Fire risk
- Fire hazard rating
- Natural fire regimes
- Degree of departure from natural fire regime (condition class)

Wildfire History

In terms of its history throughout southwest Oregon, fire is recognized as a key natural disturbance process (Atzet and Wheeler 1982). Human-caused and lightning fires have been a source of disturbance to the landscape for thousands of years. Native Americans influenced vegetation patterns for over a thousand years by igniting fires to enhance values that were important to their culture (Pullen 1995). Eventually, early Euro-American settlers to this area used fire to improve grazing and farming and to expose rock and soil for mining. Thus, fire has played an important role in influencing vegetative successional processes. Observations based on fire scars and vegetative patterns indicate that large fires were a common occurrence in the area and were of varying severity.

Fire Suppression Data

Fire suppression data over the past 37 years show that 143 of the 250 fires that occurred within the greater monument boundary were on public land. One hundred and seven fires started on private land. Most of the fires (81 percent) were less than 0.25 acres; 43 fires were between 0.26 and 10 acres; four fires were between 10.01 and 100 acres; and the largest fire during this time period was 441 acres. Initial attack was done primarily (95 percent) with hand crews and engines. Approximately 50 percent of the fires occurred under high to extreme fire danger ratings (as determined by the Oregon Department of Forestry).

Of all the fires that started between 1967 and 2003, lightning accounted for 136 fires (54 percent). Lightning was the main cause of fires that started on public land (64 percent), while human-caused fires where the main source of fire starts on private land (59 percent).

Fire Risk

The following formula was used to determine the monument's fire occurrence rate per decade per 1,000 acres:

Fire Occurrence Rate/Decade/1,000 Acres = $\{(X/Y)*10\}/Z$, where

X = number of starts recorded for the area from the fire start data base,
Y = period of time covered by the data base,
Z = number of acres analyzed (displayed in thousands).

Thus, using the fire history data for the past 37 years, the fire occurrence rate within the greater monument boundary is calculated as follows:

{(250/37)*10}/85.173 = 0.79 fires/decade/1,000 acres

This fire occurrence rate corresponds to the moderate fire risk category below which projects that one fire will occur every 11 to 20 years on each 1,000 acres.

Low Risk: fire occurrence rate = 0 - 0.49 fires/decade/1,000 acres; this projects one fire every 20 or more years/thousand acres.

Moderate Risk: fire occurrence rate = 0.5 - 0.99 fires/decade/1,000 acres; this projects one fire every 11 - 20 years/thousand acres.

High Risk: fire occurrence rate = greater than 0.99 fires/decade/1,000 acres; this projects one fire every 0 - 10 years/thousand acres.

This risk category is consistent with the fire risk for the same time period over the entire Medford District.

Fire Hazard Rating

To determine a "fire hazard rating" vegetation is first assessed by type, arrangement, volume, condition, and location. Next, the analysis looks at how these characteristics combine to determine the threat of ignition, the spread of fire, and difficulty of control. Fire hazard rating is a useful tool in the planning process because it helps in prioritizing watersheds and broad areas within a watershed in need of fuels management treatment. For purposes of this plan, fire hazard rating was determined at a broad-scale level (utilizing satellite data in combination with other factors); planning for site-specific projects would further analyze assumptions made in this plan.

In the fall of 1995, a team of fuel management specialists from the Medford BLM and Rogue River National Forest developed a standard method for assigning a fire hazard rating to local areas. Based on knowledge of fire behavior of southwest Oregon, the following factors were determined to be necessary in order to assign a fire hazard rating to an area:

- fuel model
- presence of ladder fuels
- slope
- aspect
- elevation

The following point system was then developed by the team and assigned to each factor to determine the fire hazard rating for the monument:

Fuel Models (fuel models are defined in Appendix K of the draft plan)

1. Fuel Models 1,2,3,8 .... 0 points
2. Fuel Models 5,6,9 .... 5 points
3. Fuel Models 11,10 .... 10 points
4. Fuel Models 4,12,13 .... 15 points

Presence of Ladder Fuels ..... 10 points

Slope

< 20% slope....................................5 points

20% - 45% slope.......................... 10 points

> 45% slope.................................. 25 points

Aspect

315 - 360 & 0 - 68 degrees .... 5 points

68 - 135 & 293 - 315 degrees ......10 points

135 - 293 degrees ....15 points

Elevation

> 4,500 feet ....10 points

Hazard ratings are based on the total number of points assigned to each of the factors above (Table E-1):

Table E-1. Hazard Rating Classes

Points	Hazard Rating
0 - 24	Low
25 - 50	Moderate
> 50	High

Field inventory and satellite data were used to establish fuel models and the presence of ladder fuels for conifer stands within the CSNM. Satellite data was used for oak woodlands, shrublands and grasslands to establish fuel models. This information was analyzed in GIS along with information on slope, aspect and elevation to estimate a broad hazard rating for all lands within the greater monument boundary.

A majority of the CSNM is estimated to have moderate or high fire hazard based on the factors described above (Table E-2).

Table E-2. Fire Hazard Ratings for the CSNM

Fire Hazard Rating	Percentage of Acres in Each Category
Low hazard	2%
Moderate hazard	66%
High hazard	32%

Fire hazard ratings are developed at the landscape level. Actual fire hazard incorporating all landscape features, including natural fuel breaks, would be used to assess fire hazard at the site-specific level. Fire hazard, in conjunction with fire risk and values at risk aid in prioritizing where fuels reduction work may be needed.

Fire Regime

A natural fire regime is a general classification of the role fire would play across a landscape in the absence of modern human intervention, but including the influence of aboriginal burning (Agee 1993, Brown 1995). Five broad-scale definitions for "natural", or historic, fire regimes have been developed by Hardy et al. (2001) and Schmidt et al. (2002); these were subsequently interpreted for fire and fuels management by Hann and Bunnell (2001). The five natural fire regimes are classified based on the average number of years between fires (fire frequency) combined with the fire severity (amount of replacement) on the dominant overstory vegetation.

Climate and topography combine to create the fire regimes found throughout the CSNM. As mentioned above, fire regime refers to the frequency, severity and extent of fires that would have naturally occurred in an area given the existing vegetation types (Agee 1991). The draft plan originally identified and mapped three fire regimes in the CSNM. Since the draft, the planning team determined that expanding the number of fire regimes would better reflect the diversity of the area. These regimes are used nationally as a foundation for "A Cohesive Strategy for Protecting People and Natural Resources" (Hardy et al. 2001, Schmidt et al. 2002, Hann and Brunnell 2001).

As the scale of application becomes finer, these regimes may be defined with more detail, or any one regime may be further divided. Due to the wide variation of fire affects on vegetation and in some cases the longevity of return interval between fire events in the Pacific Northwest, the nationally developed fire regime categories have been supplemented by the regional ecology group to account for fire effect on ecosystem qualities. Listed below are the fire regimes that are recognized to exist within the Pacific Northwest region. Although they are still a broad evaluation for the monument site, they reflect more closely the effects of past fire activity on the vegetation of this local area at a landscape scale.

A mid-scale assessment of fire regime and condition class based on plant series for southwest Oregon is currently being developed. Specific plant communities within the CSNM and the variation in their fire regimes would need to be assessed on a site-by-site basis and then considered with their relationship to the landscape as a whole. To derive vegetation descriptions of the historic landscapes for use as a reference condition, the planning team is using literature searches of historic accounts of the area, photo documentation, and surveyor accounts. From these historic descriptions, the fire regimes for the landscapes throughout the CSNM will be determined.

When additional analysis is available, the monument's five fire regimes will be mapped. With these delineations in place, it will be possible to qualitatively measure the effects of recent human activities and management on the ecosystems within the CSNM.

Frequent Fire Regime Interval

Fire Regime I: Frequent fire return interval with surface fires of low severity
A low-severity regime is characterized by nearly continual summer drought and frequent (0 - 35 years) widespread fires that burn with low intensity. In general, these are savannah-type vegetation structures maintained by frequent fire. Fire Regime I also includes some frequent mixed-severity fires that created a mosaic of different aged post-fire open forest, early to mid-seral forest structural stages, and shrub or herb-dominated patches. In the monument, this regime is characterized by vegetation types such as open stands of hardwoods and mixed hardwood and pine, which are similar to the Interior Valley Vegetative Zone of Franklin and Dyrness (1988). These stands are located in the Siskiyou Foothills ecoregion (Map 3) and at the lower elevation and more exposed sites of the monument's other ecoregions. These plant communities historically recovered rapidly from fire and can be directly or indirectly dependent on fire for their continued persistence. The dominant trees within this regime are adapted to resist fire due to the thick bark they develop at a young age.

In contrast, large areas of grasslands and woodlands of the CSNM appear to deviate from this pattern. Some plant communities of the southwest portion of the CSNM (including the Mariposa Lily Botanical Area) and along Highway 66 show little change in aerial photo comparison (1939 versus current) and repeat photo analysis. Factors other than fire that may play a role in maintaining the static appearance of these grasslands, shrublands, and woodlands include soil characteristics, conversion to annual grass understory, or local extirpation of woody species by historic, season-long grazing practices. Areas within the monument that deviate from these general site qualities and the historic reference would be addressed at the site-specific level. Other influences to the sites, such as grazing, may have contributed in combination with missed fire cycles to affect their current condition.

Fire Regime II: Frequent fire return interval; high or replacement severity
Typically, these are shrub or grasslands that are maintained by frequent fires. Fires may kill or consume non-sprouting shrubs, but the seed source in the soil is often stimulated by the fire's heat. Fire removes the tops of sprouting shrubs, which typically resprout, becoming dominant within 5 - 15 years. More frequent fire return intervals can result in the local extirpation of both seed and resprout-dependent shrubs. The fires tend to kill most of the tree regeneration, such as juniper, Douglas-fir, and ponderosa pine. This regime would be represented in the CSNM by the thickets of wedgeleaf ceanothus (*ceanothus cuneatus),* whiteleaf manzanita (*arctostaphylos viscida),* and some of the open meadows. Frequent fire return intervals can range up to 50 years. It is important to note that fire return intervals are difficult to determine for shrublands and chaparral.

Infrequent Fire Regime Interval

Fire Regime III: Infrequent fire return interval with mixed fire severity
Generally these sites display a mosaic of different age class vegetation that often ranges from post-fire open forest to early to mid-seral forest structural stages, with occasional shrub or herb dominated patches. This regime is associated with the Mixed Conifer Vegetative Zone of Franklin and Dyrness (1988). It is further characterized by long summer dry periods; fires are infrequent (35 - 100 years). It is the most difficult fire regime to characterize and is often located in a transitional position between low and high elevation forests or plant communities. Fires burn with different degrees of severity within this regime and patches of varying sizes of mortality to all strata of the vegetation occur. Stand replacement fires, as well as low-intensity fires can occur, depending on burning conditions. The overall effect of fire on the landscape in this regime is a mosaic burn. The frequency with which the historic regimes vary across the Pacific Northwest—and in southwest Oregon, in particular—are of importance in understanding the departure in the current vegetation character from the historic character. The following variations in fire frequency and severity are recognized by the Oregon/Washington regional assessment for this fire regime:

Fire Regime III(a): < 50 years with mixed severity
Typical potential plant communities include mixed conifer, and very dry site westside Douglas-fir. Lower severity fires predominate in many events historically. Some of the monument mixed conifer sites will tend into this classification.

Fire Regime III(b): 50 - 100 years with mixed severity
The amount of severe fire effects across landscapes in these historic events would range between the III(a) and III(c) Regimes. Within the monument the mid-elevation dry site white fir and some of the mixed conifer stands would fall into this classification.

Fire Regime III(c): 100 - 200 years with mixed severity
Higher severity fires in larger patches of mortality dominated many of these historic events. High elevation stands of white fir and mixed conifer within the monument may be included in this classification.

Fire Regime IV: Infrequent fire return interval with replacement fire severity
These sites are usually characterized by large patches (100+ acres) of similar age post-fire shrub or herb-dominated structures, or early to mid-seral forest cycled by infrequent fires. When fire occurs on these sites, a high rate of mortality to the above-ground vegetation is seen over large portions of the landscape. In both Regimes III and IV, the fire return interval can be up to 200 years. The main descriptors that provide the difference between Regimes III and IV are the fire effects on the above-ground vegetation.

The following variations in fire frequency and severity are recognized by the Oregon/Washington regional assessment for this fire regime:

Fire Regime IV(a): 35 - 100 years high severity fires
These are forested stands that would typically be considered long-return fire interval, but are positioned upslope from shorter return interval systems. Often these upslope communities will show effects from more frequent fires and still retain qualities of longer return interval sites.

Fire Regime IV(b): 100+ years high severity, patchy arrangement; typical interval 100 - 150 years
Some high elevation white fir sites within the monument may be represented by this classification. These sites include the upper reaches of Chinquapin, Hobart and Soda mountains.

Fire Regime IV(c): 100 - 200 years high severity
This regime is characterized by the White Fir Vegetation Zone (Franklin and Dyrness 1988). This environment typically has moist, cool conditions with infrequent fires. Accurate fire return intervals have not been calculated because of the long intervals between fires. When fires occur, they are due to unusual conditions, such as drought periods associated with high winds. Fires are of high intensity and normally are stand replacement fires. High elevation white fir stands within the CSNM would be represented by this fire disturbance regime. These include mesic sites present on the upper reaches of Chinquapin, Hobart and Soda mountains.

Long Interval Fire Regime

Fire Regime V: Rare or long fire return interval with replacement fire severity

Sites that rarely burn are described much the same as Fire Regime IV due to the similar effects to above ground vegetation. The key difference is the interval period between episodes is usually much longer (100 - 200+ years). This fire regime does not occur in the monument.

A close approximation of past frequency of fire occurrence, extent, and severity on particular sites is important in understanding the relative difference in vegetation and dead and down debris on these sites today. The change or departure on these sites in the amount of these materials has a direct relationship to the type of fire behavior and post-fire effects these sites will support today when compared to the past. Interruption of disturbance processes by excluding fire is only one management practice that has had an affect on specific areas within the monument. Other elements (e.g., climatic variation) and management practices in combination with fire exclusion are important to consider. In an assessment of site-specific conditions, classifying the site's current condition compared to a reference will give some indication of the change to the type of fire severity or fire behavior characteristics. The ability to predict potential fire behavior characteristics is important for understanding the risk to people and key ecological resources.

Condition Classes

Characteristic vegetation and fuel conditions (as described above) are considered to be those that occurred within the natural, or historical fire regime. Uncharacteristic conditions are considered to be those that did not occur within the natural fire regime, such as invasive species (weeds), "high graded" forest composition and structure (e.g., large trees removed by harvesting timber), or repeated annual grazing that maintains grassy fuels across relatively large areas at levels that will not carry a surface fire. Further uncharacteristic conditions created by changes in structure and density contribute to more destructive insect and disease occurrence.

A fire regime condition class (FRCC) is based on a relative measure describing the degree of departure from the natural fire regime (Hann and Bunnell 2001). The condition class scale was developed to exhibit the departure in severity, intensity, and frequency of fires burning in the ecosystem in its current condition as compared to its historic condition. This departure results in changes to one (or more) of the following ecological components: vegetation characteristics (species composition, structural stages, stand age, canopy closure, and mosaic pattern); fuel composition; fire frequency, severity, and pattern; and other associated disturbances (e.g., insect and diseased-related mortality, grazing, and drought).

Determination of amount of departure is based on comparison of a composite measure of fire regime attributes (vegetation characteristics; fuel composition; fire frequency, severity and pattern) to the central tendency of the natural fire regime. The amount of departure is then classified to determine the fire regime condition class.

The means for making an assessment on how much fire exclusion, other human activity and management practices, and evolutionary tendencies, has affected an ecosystem is through classifying the current condition of the site based on a reference. This reference (fire regime) is usually historical, pre-dating when fire exclusion, the introduction of non-native species, and Euro-settlement activity and management, became an influence in these systems. Reference conditions are very useful as indicators of ecosystem function and sustainability, but do not necessarily represent desired future conditions, i.e., they may not reflect sustainable conditions under current climate, land use, or managerial constraints, and they may not be compatible with social expectations.

Using the above delineations of the historic fire regimes, an assessment will be made as to the departure from the current condition of these landscapes compared to the historic reference. The risk of losing key components of the system from fire or other disturbance increases as the condition classes rise on the scale from one to three:

Condition Class 1
For the most part, these ecosystems are currently within historical ranges. Key components of the ecosystem are not at risk of being lost due to wildfire effects.

Condition Class 2
These ecosystems are moderately altered from their historical range at the patch and/or landscape scale by either increased or decreased fire frequency. They are at moderate risk of losing key components of their systems due to fire effects.

Condition Class 3
These lands have been significantly altered from their historic range. Because fire regimes have been altered they are at risk of losing key components of their systems due to fire effects.

Although condition classes in the monument have not been determined, current information indicates that a component of grasslands, oak woodlands, and chaparral show the same vegetation structure depicted by cadastral surveys, historic photos, and archived aerial photos. These plant communities would be considered to be within the range of natural variability and thus in Condition Class 1. Other forest and woodland communities showing change throughout the monument would be in Condition Classes 2 and 3. Much of the high elevation timbered lands of the CSNM are of the longer return intervals; these communities burn with stand replacement characteristics over moderately long periods of time between fire episodes. Examples of these vegetative types within the CSNM area are high elevation white fir, in a Condition Class 1 or 2 based on the fire regime criteria.

APPENDIX F

Prescribed Fire

INTRODUCTION

Prescribed burning is defined as fire applied by qualified personnel in a knowledgeable manner to vegetation (fuels) on a specific land area under selected weather conditions to accomplish predetermined, well-defined resource management objectives. Ash returns vital nutrients to life-supporting soils, which in turn provide for healthy vegetation and habitat for wildlife and birds. Fire reduces the number of small, competing trees, allowing established trees to grow healthier with a greater share of water and nutrients. Most importantly, prescribed fire can help protect public and private lands from the devastation of a wildfire by removing tangled undergrowth, accumulated dead material, and fine fuels.

Prescribed fire is a complex tool. Only a certified fire management official is allowed to burn. Proper site analysis and detailed planning are mandatory before every prescribed burn.

POLICIES AND PLANS

The 1995/2001 Revised Federal Wildland Fire Policy directs federal agencies to achieve a balance between suppression of wildfire to protect life, property, and resources, and fire use to regulate fuels and maintain healthy ecosystems. The policy requires that every area with burnable vegetation have an approved Fire Management Plan (FMP).

All use of prescribed fire is a coordinated interdisciplinary effort supported by resource and fire management. Resource management is responsible for managing vegetation, wildlife and soils. Fire management is responsible for identifying hazardous fuels situations and managing ignitions. The Fire Management Plan described here serves as the document to initiate, analyze, and provide the basis for using prescribed fire to meet resource objectives. Moreover, the FMP is the program strategy document for prescribed fire activities; it captures and quantifies the overall fuels management program needs of the area. The FMP identifies how prescribed fire, along with other fire management strategies, will be used to meet the overall land management goals identified in the RMP and in reality becomes part of the RMP.

An integrated Fire Management Plan (FMP) is currently being written and includes the Medford/Coos BLM Districts, Rogue Siskiyou NF, Oregon Caves National Monument, SW Oregon Department of Forestry, and Coos Fire Protective Association. This cooperative planning effort will be based on resource management objectives from existing and developing Resource and Land Management Plans, local, state, and federal law, and interagency fire policy. In as much, the lands comprised within the Cascade-Siskiyou National Monument will be addressed in this FMP in coordination with the resource and management objectives detailed in the monument's final management plan and record of decision.

IMPLEMENTATION OF PRESCRIBED FIRE

Site Study

The first step in using prescribed fire is to study fire behavior, fire and smoke management, burning laws, plant responses, animal needs, and animal responses. Information of concern to locals is collected through public outreach and through collaboration with local landowners, businesses and ranchers. An interdisciplinary team of specialists in the areas of fuels, vegetation (botany, range), wildlife, soils, hydrology, cultural resources, threatened and endangered species, etc., then compile a document that describes current and future desired resource management options. The end result is an Environmental Assessment (EA). An EA for fuels hazard reduction contains all of the acceptable fire and fuels management options for the area of interest.

Burn Plan

The prescribed fire (burn) plan is a site-specific operational plan that describes the purpose, resource and fire objectives, and operation procedures required to properly plan, safely implement, monitor (observation, measurement), and evaluate fire and resource objectives for this type of treatment. It is a stand-alone document that provides the project manager with all the information needed to implement the project. Fire managers maintain close coordination and communication among interdisciplinary team members and other involved participants.

The prescribe fire plan contains the following information:

Source Documents: Land use plans are the primary planning documents through which prescribed fire projects will be identified. The CSNM management plan identifies the management goals and constraints that project planners and coordinators need for development of a prescribed fire plan.

Preliminary site review: Resource specialists and fire management personnel and/or the fuels management specialist would conduct an on-site review to determine the potential success of a proposed prescribed fire project. Outside groups and individuals are included, as appropriate.

Project objectives: The desired resource objectives will be discussed and confirmed. Specific prescribed fire treatment objectives are written to describe the fire treatments needed to meet the resource objectives. Project constraints are also identified.

Concurrences: Other program input is included and the amount of time and personnel commitment needed to develop and implement the project is identified.

Data collection: Data needs are identified and data are collected (e.g., botanical and archaeological information, and fuel inventories). Monitoring data from previous projects is reviewed and lessons learned are incorporated into the current project.

National Environmental Policy Act (NEPA) compliance: NEPA compliance is required for all prescribed fire projects. The environmental analysis reveals the effects of using or not using prescribed fire in a specific geographic area at a specific time. NEPA compliance usually takes the form of a programmatic environmental assessment (EA) that covers a number of related treatments (mechanical and prescribed fire) in association with the fire management plan.

Clearances and permits: Several types of clearances, permits and other authorization documents may be required. These generally are cultural resource clearances, threatened/endangered species clearances, and air quality permits, and may also include land owner agreements or releases and assistance or cooperative agreements.

Review and approval: The completed Prescribed Fire Plan receives a technical review by a qualified individual. The plan is then submitted for approval by the Agency Administrator.

Determination of Complexity

A complexity rating will be completed for each prescribed fire project. The determination of the prescribed fire complexity will be based upon an assessment of risk (the probability or likelihood of an unexpected event or situation occurring), potential consequences (some measure of the cost or result of an undesirable event or situation occurring), and technical difficulty (the level of skills needed to complete the project and deal with expected events).

Smoke Management Considerations

According to the Clean Air Act (Public Law 95-95), compliance with federal, state and local air quality regulations is mandatory and will require coordination with state and local air quality authorities. Smoke management can also be a significant part of determining the complexity of a prescribed fire project.

The operational guidance for the Oregon Smoke Management Program is managed by the Oregon State Forester. The policy of the State Forester is to:

- Regulate prescribed burning operations on forest land.
- Achieve strict compliance with the smoke management plan.
- Minimize emissions from prescribed burning.

For the purpose of maintaining air quality, the State Forester and the Department of Environmental Quality shall approve an Oregon Smoke Management Plan for the purpose of managing smoke in areas they designate. The authority for the State administration is ORS 477.513(3)(a).

ORS468A.005 through 468A.085 authorizes the DEQ to establish air quality standards including emission standards for the entire state or an area of the state. Under this authority the State Forester coordinates the administration and operation of the plan. The State Forester also issues additional restrictions on prescribed burning in situations where air quality of the entire State or part thereof is, or would likely become, adversely affected by smoke.

In compliance with the Oregon Smoke Management Plan, prescribed burning activities in the Medford District require pre-burn registration of all prescribed burn locations with the Oregon State Forester. Registration includes specific location, size of burn, topographic and fuel characteristics. Advisories or restrictions are received from the State Forester on a daily basis concerning smoke management and air quality conditions.

The amount of smoke that constitutes a nuisance is not often defined but generally includes a property use or behavior that significantly impairs the use of other property due to some health, safety, or economic consideration. The specific concentration or duration of smoke that constitutes a nuisance is subjective and site specific.

In order to avoid creating or continuing nuisance situations, the BLM has implemented smoke management guidelines. The guidelines used for each fire include:

- Identify critical smoke sensitive targets during the planning stage that may be affected by smoke.
- Prescribe weather and burning conditions that would direct smoke away from critical sensitive targets, such as wind direction and speed. Others include burning conditions that maximize the amount of smoke lifted and weather conditions that maximize dispersal (i.e., mixing height, transport wind speed and probability of air mass stagnation).
- On the afternoon prior to burning, obtain a weather forecast and smoke management forecast to make sure the prescribed weather and burning conditions will be met.
- On the morning of the burn, check to see if the weather and smoke management forecasts are favorable. If so, initiate any planned mitigation measures, light the fire and begin monitoring fire/ smoke behavior for unanticipated situations. Be prepared to cease ignition and /or begin suppression if unanticipated situations cannot be controlled or mitigated. Also, be prepared to patrol smoke sensitive roadways through the night if the fire is still producing significant smoke at dusk.
- Whenever possible, burn when large fuel (3”+ in diameter) and duff moisture levels are high to minimize emissions. This may be best accomplished by burning under spring-like conditions.

- Whenever possible, pile fuels prior to burning. Piled fuels result in fewer emissions per ton of fuel consumed and have greater seasonal flexibility.
- Whenever possible, burn only fuel concentrations rather than the entire area.
- Whenever possible burn during periods of atmospheric instability for better smoke dispersal.

Consultation With and Notification of Grazing Lessees

The Code of Federal Regulations (CFR) 4110.3 (Changes in permitted use) and CFR 4110.3-2 (decreasing permitted use), provide guidance to land managers when addressing issues that affect range management. This includes prescribed burning on grazing allotments.

The heart and soul of this authority centers on "consultation, cooperation, and coordination with affected permittees or lessees, ... and the interested public". The approach most often used (and most preferable) involves contacting lessees and giving them the chance to comment on the proposed fuels treatment during the NEPA planning process. Options, as well as time frames, are explained during this process, and agreement with the interested public is sought.

In general, during team meetings to draft the burn plan, areas proposed for prescribed burn treatment(s) are overlain with grazing allotments through the use of Geographic Information Systems (GIS). At that point a team member will begin the consultation process by contacting individuals or groups of lessees, depending on the size and scope of the project area. It may be necessary to remove cattle up to one year before a prescribed fire to allow fuels to build up and up to two years after a prescribed fire to allow vegetation to recover. Recovery time varies and may be less with a low-intensity burn, or more, with a severe, stand replacing burn. Specialists, as members of the planning team, consider many different factors when recommending how long the recovery period will need to be for the project area. Each area would be monitored following the prescribed fire to determine recovery rate and necessary rest for the following year.

During the decision-making process, discussions would include possible impacts and disruption to the livelihood of livestock operations. Every effort will be made to incorporate the burn plan into the local grazing use and rotation to minimize possible impacts to operations. Options available to the lessees could include, but are not limited to: identifying alternative areas for stock to go; fencing out the project area to close only a portion of the allotment to grazing; using natural barriers to keep cattle out of the project area; modifying the season of use; allowing for non-use of the allotment; etc.

One year prior to treatment, a letter would be sent to lessees asking for voluntary cooperation in resting allotments or modifying grazing use. Preferably, an agreement is reached with the lessee(s) and a document is drafted to record the details. If an agreement is not reached, a proposed decision could be issued by the Authorized Officer, explaining the need for the burn treatment and asserting the authority necessary to complete planned resource management.

Notification of Neighbors, Media, and the Public

As general practice, press releases are issued at the critical stages of the entire planning process. At the beginning of the process, a scoping letter usually includes a description of the project area and is intended to solicit input from the public about concerns and desired outcomes for the project. An open house or field trips could be held at the beginning of the project with resource specialists or members of the interdisciplinary planning team (ID team) on hand to answer questions from the public. Once the planning process and required surveys are complete, land managers will be able to begin prescribed burning along with other fuels treatments.

Closer to the impending project date, a letter is mailed to local landowners outlining the intended burn plans, the number of acres to be burned, potential smoke impacts and a general fact sheet or brochure regarding prescribed burning. The letter invites those interested to contact their local fuels specialist so that their concerns can be addressed. A few days prior to a burn, public notices are usually posted at local businesses in the project area.

The Burn

The burn manager will arrange for and communicate with firefighting personnel, obtain burn permits, check to determine that equipment is in working order, develop an adequate fuel load (fairly dry leaves and plant stems), and prepare fireguards.

Obtaining weather information one day prior to the burn date is imperative. Fuel will not burn when wet or will not burn adequately when the humidity is high. Conversely, fire control is compromised when the humidity is below 25%.

Fire behavior and the location of the fire front are monitored during ignition. Fire weather should be monitored not only during the ignition phase, but for the entire length of time during which fire remains in the unit. Throughout the prescribed fire, comparisons are made of the predicted and observed fire behavior.

Safety Considerations

The safety of fire fighters and the public is the number one priority when planning and implementing a prescribed fire project. Every person involved in a prescribed fire project is responsible for identifying and reporting safety issues and concerns. All personnel will be briefed prior to any prescribed fire assignment. The briefing will ensure that all involved parties understand how the project will be implemented and what their assignments are.

Exposure to smoke during prescribed fire operations can be a significant safety concern. Research has shown the smoke exposure on prescribed fires, especially in the holding and ignition positions, often exceeds that of wildfires. The prescribed fire project planners and prescribed fire burn bosses take precautions to reduce exposure to smoke for firefighters, as well as neighbors.

Monitoring

Monitoring is the consistent collection and analysis of repeated observations or measurements to evaluate changes in condition and progress toward meeting management objectives. Prescribed fire monitoring can be defined as a systematic process for collecting and recording information to provide a basis for evaluating and adjusting resource and fire treatment objectives, prescriptions, and implementation practices. In prescribed fire monitoring, information is also gathered to document the treatment itself.

Monitoring allows land managers to record pre-burn ecosystem variables and fire characteristics and then to follow fire-induced changes to the ecosystem over several years. Each BLM Field Office develops a minimum monitoring program that will allow fire and resource managers to determine if the fire treatment and resource objectives are being met.

The minimum monitoring requirements established for individual prescribed fire projects include weather during the fire, observed fire behavior and whether fire treatment objectives have been met.

Post-burn monitoring activities include both observations and measurement in order to determine whether fire treatment objectives were met. Post-burn data is collected at the same locations where data were obtained before the fire.

APPENDIX G

Strategy for Controlling the Spread of Noxious Weeds and Other Invasive Grasses in the Cascade-Siskiyou National Monument

WEED ABATEMENT MANAGEMENT STRATEGY

This appendix describes the strategy and objectives for weed management and provides a framework to control the spread of noxious weeds and other invasive grasses in the monument. Although this strategy is specific to the Cascade-Siskiyou National Monument (CSNM), it incorporates decisions and guidance provided in the following documents:

- The Decision Record, signed June 5, 1998, for the*Integrated Weed Management Plan* with the associated FONSI and Medford District Integrated Weed Management Plan.
- Instruction Memo OR 91-302 *Approved Herbicides for Noxious Weed Control* states: "A copy of this memorandum should be made a permanent part of your reference copy of the Record of Decision for the Northwest Area Noxious Weed Control Program..., BLM offices in Oregon and Washington are authorized to use these herbicides for noxious weed control in accordance with BLM Manual H-9011-1."
- The Supplemental Record of Decision, signed May 5, 1987 for the Northwest Area Noxious Weed Control Program and the associated Final Environmental Impact Statement (March 1987).

The primary goal of monument management is to maintain, protect, and restore habitat and ecological processes critical to richness and abundance of the objects of biological interest for which the monument was proclaimed. The proliferation of weeds across the landscape is an obstacle to this goal, and is a management concern throughout the monument, especially in the Diversity Emphasis Area. Current objectives for weed management have been developed and are described below. Additional weed abatement objectives could be developed through research and pilot studies following the adaptive management strategy in Appendix C.

Spatial analysis in GIS indicates that weeds are associated with roads, sites of acute disturbance (past timber harvest, pastures and other tilled areas), and areas of high livestock utilization. Some of the major ecological problems associated with grass/shrub/woodlands involve annual grasses, yellow starthistle, and Canada thistle displacing the native bunchgrasses found in the monument. Limiting disturbance, therefore, is critical to controlling weeds; reduction of soil surface disturbance and increased shading of the soil can help favor the growth of native bunchgrasses over noxious weeds and other invasive grasses.

The literature supports the following formulation of a general management strategy incorporating aspects of vegetation management and weed control:

Maintain healthy herbaceous plant communities as a barrier to weed invasions.

- Limit ground-disturbing activities.
- Collect and maintain sources of native grass and forb seed for emergency restoration.
- Sow with native seed where natural or ground-disturbing management activities take place.

Improve condition of stands that have a mixture of weeds and remnant native herbaceous species.

- Apply manual or spot herbicide treatments.

- Utilize prescribed burning where appropriate.
- Restore native species by seeding and/or planting.
- Utilize different grazing strategies to reduce disturbance.

Eradicate and restore small isolated weed patches to native herbaceous plant domination.

- Apply manual or spot herbicide treatment.
- Protect sensitive resources (e.g., wetlands, riparian, and rare plants). If herbicide treatments occur in riparian areas, use appropriate herbicides labeled for use in these communities.
- Seed areas with native grass and forbs.

Survey and treat primary travel corridors that serve as vectors for weed spread.

- Inventory roads and power line corridors.
- Apply manual or spot herbicide treatments in a systematic manner.
- Work with power companies, the county, and adjacent land owners to reduce periodic disturbance and treat weeds on adjacent non-federal land.
- Re-vegetate treated areas with native grass and forbs.

Isolate and treat large extensive weed areas.

- Minimize soil disturbance and activities that could spread weeds, especially during the wet season.
- Manually or spot spray large patches working from the "outside" in toward the center of the infestation.
- Seed or plant treated locations with native vegetation.

Implement a long-term restoration/management plan for extensive weedy areas (>1 acre)

- Work with local groups and land owners on noxious weed education and management.
- Identify high-priority treatment areas.
- Avoid disturbance in large patches.
- Monitor efficacy of treatment(s).
- Apply adaptive management strategy.

POTENTIAL MANAGEMENT TOOLS

Education and cooperative partnerships with adjacent landowners and local groups

Educating private land owners within the greater monument boundary on weed issues and treatment strategies is paramount to succeeding in controlling and eradicating weeds in the monument. Partnerships and cost-sharing projects, moreover, are an efficient way to treat larger landscape areas. Working with adjacent land owners, including companies under BLM-permitted activities (e.g., power companies), to prevent the spread of weeds across ownership boundaries, and addressing noxious weeds in all land management activities is critical to success for the landscape as a whole. Identification booklets, preventive strategies, and recommended treatment methods could be a valuable tool for educating and developing partnerships with the monument public.

Weed inventories

The use of surveys and inventories contribute to the understanding of the pattern and distribution of weeds within the monument, informing ongoing creation of adaptive strategies to control and eliminate such weeds from the monument. Surveys identify new species and patches becoming established, such that they become a treatment priority before they spread. Focused inventories along identified primary travel corridors and areas of primary concern will help target specific weed populations for containment and eradication.

Weed prevention and treatments

Weed prevention is an important tool to stop the introduction and spread of weeds. Prevention activities can reduce the spread and introduction of weeds. These activities include the use of "weed-free" hay, mulch, and seed for restoration activities; routinely washing the under-carriage of equipment and vehicles; and keeping vehicles and livestock out of heavily infested areas (i.e., reduce disturbance). All available means to effectively and efficiently prevent and treat weeds could be used in the monument, including manual weeding, hot foam treatments, cultural control, biological control, herbicides, prescribed fire, or grazing. Various treatments are discussed below in more detail.

Manual weeding can effectively remove target species over small- to medium-sized areas. Extensive manual weeding can also cause severe damage to micro-topography and microphytic crust through trampling, potentially leading to soil surface instability.

Hot foam treatment is a manual method that utilizes hot steam with foam (formulated from sugar extracts from corn and coconut). This treatment is used along roadways and other accessible areas to treat weeds. The steam and foam is delivered through a hose with a wand. The foam holds the temperature of the steam for several minutes, killing the unwanted vegetation.

The hot foam method is used on individual weed plants, usually in the rosette stage. The hot steam (212 degrees) can kill individual special status plants if treated, but pre-disturbance surveys for special status plants will identify plants to be protected.

Cultural treatments, such as disking or plowing, consist of entire plant removal from a specific site, but do have some negative side effects. For example, these treatments require precise timing to control the desired species; the acute ground disturbance resulting from these treatments can destroy the remnant native vegetation and promote additional weed invasion; and these treatments are difficult to apply in rough or rocky terrain, and will not occur in the monument with perhaps the exception of road-beds during decommissioning. Mowing or clipping removes the above-ground parts of all plants which is harmless to native bunchgrasses. Mowing can result in light to moderate damage to the soil surface, depending on the technique used. Mowing and manual seed head clipping can be effective in reducing a single year seed crop, although it does not kill the plants. However, some weeds, like starthistle or knapweeds, adapt quickly and will flower closer to the ground following mowing. Mowing may require multiple applications and can lead to soil surface instability. Mowing is not likely to be used in the monument except perhaps along road edges.

Bio-control involves the use of insects to control noxious weeds. Insect releases for starthistle in the monument are ongoing. This method is only effective in certain locations. Currently, there are no effective bio-controls available for other weeds like Canada thistle, Dyer's woad, cheatgrass or medusahead. As new bio-controls are developed in the future, these could be incorporated into the monument's weed strategy.

Spot spraying with herbicides can target specific plants in specific areas. Herbicide application is the most cost-effective weed treatment over large areas and has a low level of soil disturbance. Within the monument, only spot spraying or individual plant wicking or wiping with approved chemicals will be used so as to reduce secondary harm to other life forms. In riparian areas, only chemicals approved for such areas will be used in weed treatment.

Prescribed fire can be used to reduce cheatgrass, medusahead, and starthistle when the timing and intensity of the application is carefully controlled. Prescribed fire also reduces litter build-up and rejuvenates bunchgrasses over large areas. While prescribed fire can result in mortality for some woody plant species and lichens, it can also serve to rejuvenate others.

Livestock grazing prescribed at the right time and intensity may allow removal of specific plants and weeds. When applied correctly, prescribed grazing may reduce litter and rejuvenate bunchgrasses over large areas. Changing the grazing system (e.g., rest-rotation) can serve to allow recovery of the native plant community in heavily utilized areas in combination with other treatment methods. Controlled grazing by goats could also be used to control starthistle. Insufficient livestock control, however, can result in degradation of adjacent biological resources from over-utilization (e.g., in wetlands, springs, and riparian areas). Livestock are also vector for weed spread.

Vegetative restoration

Native seed application is best used several years following weed control treatments, or in areas of acute ground disturbance to prevent weeds from becoming established. Local, adapted native sources of grass and forb species have been established. Planting native shrubs and trees, especially along treated riparian areas will help restore and maintain healthy plant communities that are resistant to weed invasion. Sowing or planting appropriate native plants following under-story burning can re-establish the native plant community and facilitate succession.

Monitoring

Implementation and validation monitoring of treated areas is critical to the adaptive management process. Multiple years are often involved in successful containment and eradication. Successful weed treatments could involve different or multiple treatment methods, depending on the local site conditions, the species of targeted weeds, and infestation levels.

A thorough literature review on control measures for noxious weeds can be found in the CSNM Draft Resource Management plan, Appendix GG, pages 396-411.

PRIORITY TREATMENT AREAS

The following list of focus areas is intended to provide a relative prioritization of areas in which to survey and treat noxious weeds. These focus areas are of major concern and include the primary travel corridors that can function to spread weeds. In general, these are the areas that contain higher densities of weed populations; containment and eventual eradication is the objective. The methods for containment and eradication can vary, depending on site-specific issues, but, in general, working from the outside into the center of the infestations is the model for manual or herbicide treatments.

Given the annual fluctuations in operational funds to treat weeds, not all areas will be treated annually. New areas may be added over time as new populations are discovered; as monitoring shows successful treatment, areas will be dropped. The focus areas outlined below are a starting point for controlling noxious weeds in the monument and are not intended to be an exhaustive list. Numerous small populations occur that are also important to treat before they spread. Knapweeds, for example, are new to the monument. Because they are forming new starts, they are a high priority for eradication while populations are small.

Infestations in areas utilized by livestock are also high on the list of treatment priorities so as to prevent further weed spread and to improve the range condition. Some of these infested areas targeted for weed treatment are around seeps, springs, and stock ponds. In some areas, pasture rotation or even rest for several years from grazing could be beneficial for recovery while they are treated.

The focus areas are listed by local name, township, range, and section and/or BLM road segments. Weed infestations in adjacent areas on private lands may also be of concern, but are not listed. When possible, partnerships with adjacent land owners will be formed to treat weeds within the sub-watershed across ownerships.

Focus areas (not in priority order):

- Soda Mountain area (T40S, R3E, sections 21, 27, 28)
- Box O ranch area (T40S, R4E, sections 21, 22, 27, 28)
- Parsnip Lakes (T40S, 3E, section 10)
- Agate Flat, T41S, R4E, sections 6 and 7
- Hobart Lake (T40S, 3e, section 16)
- Eastern Schoheim road (Camp Creek) T41S, R3E, Sections 11, 12 including road 41-2E-10.1
- Scotch Creek RNA (T41S, R3E, section 8,9)
- Jenny Creek (below the Box O to the California Border)
- Mariposa Lily Botanical Area (T41S, R 2E, Sections 8, 9)
- Buck Rock (T40S, 2E, section 11) and roads 39-2E-34 and 40-2E-1
- Chinquapin area (T39S, R3E, sections 23, 26, 35)

As important as actual infested acres are, linear features that serve as vectors for spread also require attention. The major roadways coming into the monument and the large PacifiCorp power line corridor that bisect the monument are areas that receive some level of periodic disturbance from vehicles, maintenance, and animals. Weeds are spreading along these areas, mostly by seed on vehicles, equipment, and animals, including livestock. Wind and water also serve as vectors. The periodic disturbance in these areas provides available habitat for weed species to become established and then spread to adjacent areas outside the corridors. In some areas, grazing is confined to accessible areas along the roads. These linear features need to be continually surveyed and monitored, and as infestations are detected, treatment will prevent further weed spread.

Primary travel routes

- PacifiCorp power line and associated access road: (T40S, R3E, section 16, 17, 21, 27, 35;
- T41S, R3E, sections 1, 12; T41S, R4E, sections 6, 7, 8);
- Tyler Creek Road (BLM road 40-3E-5);
- Upper Jenny Creek and Roads 39-4E-6, -7.5, -8);
- Keene Creek/Lincoln creek/Rancore Pass roads (40-3E-12-12.1);
- Soda Mountain Road (39-3E-32.3);
- Lower Keene creek road (40-3E-12.2, 40-3E-7).

MITIGATING MEASURES

RODEO® (glyphosate) would be used as the primary herbicide in efforts to control noxious weeds listed by Oregon Department of Agriculture in the monument. Manual and biological treatments may also occur in conjunction with the control efforts. Treatment operations would generally occur between March 15th and October 31st.

The following mitigating measures apply to noxious weed treatments in the monument:

- **Human buffer** – None of the products may be applied within 500 feet of any residence or other place of human occupation unless the occupant or resident gives their consent in writing.
- **Cropland buffer** – Commercial products will not be applied within 100 feet of any cropland.
- **25-foot water buffer** – Commercial products applied by ground vehicles equipped with boom sprayers will not be applied within 25 feet of any water, flowing/moist (i.e., not dry) streams, springs, and wetlands (saturated ground).
- **10-foot water buffer** – Spot treatments with vehicle-mounted handguns or with backpack sprayers will not be applied to within 10 feet of water. To add an extra measure of security, a ten-foot buffer "no spray" buffer will be respected along all flowing/moist (i.e., not dry) streams, springs, and wetlands. This will eliminate the potential for any drift entering waters (Hatterman-Valenti et al. 1995). Ground application within 10 feet of any flowing/moist waters will only be done by hand-wicking, wiping, or painting.
- **Spraying Prohibitions** – Spraying operations will be prohibited when wind velocity exceeds **5 mph; when temperatures exceed 80 degrees; when air turbulence would affect spray pattern; or in the event of any other kind of adverse weather conditions that could cause the glyphosate to impact non-target plants**. These requirements would eliminate the potential for spray drift entering the stream channels.
- **Dry season application** – The herbicide treatment would occur only during months with little rain. These months will almost always be June - September; however, during some years, May can be hot and dry and weeds will ripen and begin to set seed early. Moreover, every few years, April can be almost rainless with weeks of temperatures in the high 70s. In such situations, glyphosate may be applied during April or May.
- **Weather Monitoring** – During application, weather conditions will be monitored periodically by trained personnel at spray sites. Weather will be monitored frequently during the first days of a prolonged project, especially projects within Riparian Reserves. Additional weather monitoring will occur whenever a weather change may affect safe placement of the herbicide on the target area. The intent is to ensure that weather conditions are within the parameters of this document and/or other regulatory restrictions.
- **Communication** – Prior to beginning treatment each year, the District Weed Specialist and/or Resource Area staff will provide the Resource Area Fisheries Biologists with the following information:
    - Locations to be treated
    - Riparian Reserves and approximate acres to be treated
    - Application method
    - Herbicide to be used
    - Approximate date of treatment
- **"No rain" rule** – Glyphosate would never be applied when weather reports predict precipitation within 24 hours of application, before or after. This ensures that glyphosate would not be washed off by precipitation into small rivulets, or enter ground water. From a practical perspective, glyphosate would not be as effective if sprayed when rain could wash it off.

- **Mixing and Loading Restrictions** – Herbicides will be mixed and loaded into tanks at least 100 feet from any stream channel or surface water or at a location where an accidental spill would not flow into or contaminate a stream or body of water.
- **Tank Washing and Disposal** – Spray tanks will not be washed or rinsed within 100 feet of any waters. All chemical containers will be disposed of at sites approved by the Oregon State Department of Environmental Quality.
- **Application Concentrations** – RODEO® and ACCORD® will be applied at or below concentrations allowable on the labels.
- **Quality Control** – Regular testing on field calibration and calculation will take place to prevent gross application errors. A licensed/certified herbicide applicator will oversee all spray projects. Dye or a similar method will be used to ensure that chemical application occurs only in target areas. (See "Monitoring" below.)
- **Spill Safety** – The BLM contract inspector will review the BLM spill response procedures outlined in the BLM manual 9011-1 with each applicator before commencing herbicide application operations. All hand-operated application equipment must be leak- and spill-proof.
- **Parsimony Rule** – Only the minimum area necessary for the control of noxious weeds will be treated.
- **Monitoring –** Spray cards, dye, or other type of indicator to monitor chemical drift will be used at the water's edge on a small sample (no less than five sites) of riparian treatment areas. These indicators will provide visual verification that the application methods are minimizing risk to listed fish species.

APPENDIX H

Old-Growth Emphasis Area (OGEA) Treatment Design based on Ecoregion Characteristics and Individual Stand Structures

Appendix H provides additional criteria for the design and implementation of projects in the Old-Growth Emphasis Area (OGEA). Previous field inventory work identified differences in the structure, density, and species composition of Habitat Types 1 & 2. Differences were also noted for each habitat type throughout the monument's four ecoregions. Subsequent management activities will be developed with the intention of mimicking, as well as possible, historic forest conditions at both the landscape or ecoregion level and specific site or stand level. This appendix includes the following information:

- a general overview of OGEA forests in relationship to monument ecoregions;
- an overview of what is typically found in each of the McKelvie Habitat Types (1, 2, 3 and 5) by ecoregion;
- how to use Habitat Type 1 & 2 stands as reference conditions;
- descriptions of proposed treatments by habitat type with more detail than Chapter 2; and
- standards and guidelines regarding snag retention and coarse woody debris (CWD) levels.

OVERVIEW OF ECOREGION CHARACTERISTICS

Ecoregions are defined by a number of factors that include:

- physiography (including elevation and local relief);
- geology (surficial material and bedrock);
- soil (order, common soil series, temperature and moisture regimes);
- climate (mean annual precipitation, mean annual frost-free days, mean January and July min/max temperature);
- potential natural vegetation;
- land use (recreation, forestry, watershed); and
- land cover (vegetation present).

Four ecoregions (Map 3) have been identified in the monument. The following synopsis of these ecoregions is based on Pater (1997a and 1997b).

Southern Cascades (4g)

The Southern Cascades Ecoregion (2,600-5,800 feet) is characterized by gently sloping mountains, broad valleys, a long summer drought, and high vegetation diversity. White fir (*Abies concolor*) is common. At low elevations, Douglas-fir (*Pseudotsuga menziesii*) and ponderosa pine (*Pinus ponderosa*) are prevalent. Compared to the other ecoregions in the CSNM, the Southern Cascades Ecoregion contains the most white fir plant communities as the potential natural vegetation (Atzet et al. 1996), and the highest percentage of late-successional and old-growth northern spotted owl nesting, roosting, and foraging habitat in the OGEA.

Southern Cascade Slope (9i)

The Southern Cascade Slope Ecoregion (3,600-6,300 feet) is a transitional zone between the Cascades (4) and the drier Eastern Cascade Slopes and Foothills (9). The Southern Cascade Slope Ecoregion within the CSNM tends to be predominantly gently sloping to flat ponderosa pine-dominated landscapes. White fir and Douglas-fir grow at higher elevations. Much of the Southern Cascade Slope ecoregion typically receives more precipitation than the Eastern Cascade Slopes and Siskiyou Foothills ecoregions. Meadows and grasslands are often found associated with forest stands.

Siskiyou Foothills (78b)

The Siskiyou Foothills Ecoregion (1,500-4,000 feet) is affected by a mediterranean climate, similar to that of the Rogue Valley. The driest area occurs east of Medford and is dominated by oak woodlands, ponderosa pine, and Douglas-fir. This ecoregion is the western-most and lowest in elevation in the CSNM. Few white fir are present. Pacific madrone, generally absent from the other ecoregions of the CSNM, is a common hardwood component of the forest in this ecoregion.

Klamath River Ridges (78g)

The Klamath River Ridges Ecoregion (3,800-7,000 feet) has a dry continental climate. Low elevation and south-facing slopes have more drought-resistant vegetation than elsewhere in the Klamath Ecoregion (78), such as juniper, chaparral and ponderosa pine. Mid-elevation forests are composed of sugar and ponderosa pine, as well as incense cedar and Douglas-fir. Higher and north-facing ridges are covered by Douglas-fir and white fir. A significant portion of the Klamath River Ridges in the CSNM does not have the potential capacity to become suitable habitat for northern spotted owls and therefore is not part of the OGEA because it is comprised of low elevation, south facing slopes. Most of this ecoregion is in the Diversity Emphasis Area.

Historic canopy closures vary by ecoregion (Table H-1).

Table H-1. Historic Crown Closure for Ecoregions in the OGEA (OWEB 2004)

Ecoregion	Historic Crown Closure (%)	Subwatersheds All or Partially Included in Ecoregion
Southern Cascades (4g)	40 - 45	Upper Emigrant Creek, Upper Jenny Creek, Middle Jenny Creek, Keene Creek
Southern Cascade Slope (9i)	< 30	Upper Jenny Creek, Johnson Creek, Middle Jenny Creek, Lower Jenny Creek, Fall Creek
Siskiyou Foothills (78b)	> 50	Upper Emigrant Creek
Klamath River Ridges (78g)	> 30	Upper Emigrant Creek, Keene Creek, Lower Jenny Creek, Camp Creek, Scotch Creek, East Fork Cottonwood Creek, Middle Cottonwood Creek

POTENTIAL TREATMENT DESIGNS IN THE OGEA

Potential Treatments for Habitat Type 1

No management activities are planned in Habitat Type 1. With respect to stand density and the species mix of large trees, Habitat Type 1 provides the closest current representation of the OGEA's historic condition prior to fire exclusion. However, the in-growth of shade-tolerant species currently found in the understory along with midsized trees generally less than 100 years old is not representative of historic conditions.

A 1998 inventory measured forest tree structure/size and density within Habitat Types 1 and 2 in the area that is now the CSNM (Tables H-2 through H-4). The variability of tree sizes is represented by three to five age classes. Tree stands generally consist of small, densely packed shade-tolerant conifers and an overstory of uneven-aged conifers with individual trees exceeding 35 inches dbh. Tables H-2, H-3, and H-4 provide a modeling guide to be used during the project planning process within the major plant communities and ecoregions which may vary by aspect and elevation. The species mix and size classes noted in these tables are particularly important when conducting management activities designed to promote the development of late-successional and old-growth conditions in Habitat Types 3 and 5.

The more xeric mixed conifer community (Table H-2) is typical of the mid-elevation Klamath River Ridges and the Siskiyou Foothills Ecoregions.

Table H-2. Dry Douglas-Fir/Pine Community (xeric) – Habitat Types 1 & 2

Species	Trees per Acre by Species and Size Class (DBH in Inches)									
	00-06	**07-10**	**11-14**	**15-18**	**19-22**	**23-26**	**27-30**	**31-34**	**35+**	**Total**
Ponderosa Pine	16.0	39.5	7.7	17.5	10.6	1.1	1.3	1.4	0.0	**95.1**
Douglas-Fir	78.0	54.9	24.6	11.5	8.4	2.4	0.5	0.4	1.1	**181.8**
Incense Cedar	25.0	0.0	0.0	1.5	1.7	1.1	0.4			**29.7**
Sugar Pine	0.0	0.0	0.0	4.1	1.6	1.4	0.9		0.8	**8.8**
White Fir	25.0	0.0	1.0							**26.0**
Summary	**144.0**	**94.4**	**33.3**	**34.6**	**22.3**	**6.0**	**3.1**	**1.8**	**1.9**	**341.4**
>10” dbh			33.3	34.6	22.3	6.0	3.1	1.8	1.9	**103.0**
>19” dbh					22.3	6.0	3.1	1.8	1.9	**35.1**
>30” dbh								1.8	1.9	**3.7**

The drier mixed conifer community is representative of the higher elevation Klamath River Ridges and Southern Cascade Slope Ecoregions (Table H-3).

Table H-3. Mixed Conifer Plant Community (mesic) – Habitat Types 1 & 2

Species	Trees per Acre by Species and Size Class (DBH in Inches)									
	00-06	**07-10**	**11-14**	**15-18**	**19-22**	**23-26**	**27-30**	**31-34**	**35+**	**Total**
Ponderosa Pine	25.0	0.0	0.0	2.9	3.6	0.6	1.3	0.3	2.3	**36.0**
Douglas-Fir	166.0	47.6	41.6	25.2	11.6	2.5	0.9	0.4	0.9	**296.7**
Incense Cedar	8.0	4.5	0.0	2.7	4.1	0.6	0.5	0.0	0.8	**21.2**
Sugar Pine	4.0	0.0	4.4	1.6	0.0	0.0	0.0	0.0	0.0	**10.0**
White Fir	29.0	0.0	8.7	0.0	0.8	0.0	0.0	0.0	0.0	**38.5**
California Black Oak	45.0	0.0	8.4	3.7	0.0	0.0	0.0	0.0	0.0	**57.1**
Summary	**277.0**	**52.1**	**63.1**	**36.1**	**20.1**	**3.7**	**2.7**	**0.7**	**4.0**	**459.5**
>10” dbh			63.1	36.1	20.1	3.7	2.7	0.7	4.0	**130.4**
>19” dbh					20.1	3.7	2.7	0.7	4.0	**31.2**
>30” dbh								0.7	4.0	**4.7**

The white fir plant community is primarily located in the Southern Cascades and higher Klamath River Ridges Ecoregions (Table H-4).

Table H-4. White Fir Plant Community – Habitat Type 1 & 2

	Trees per Acre by Species and Size Class (DBH in Inches)									
Species	**00-06**	**07-10**	**11-14**	**15-18**	**19-22**	**23-26**	**27-30**	**31-34**	**35+**	**Total**
Ponderosa Pine	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.3	**0.7**
Douglas-Fir	33.0	0.0	7.7	2.9	0.8	0.6	0.0	0.3	2.5	**47.8**
Incense Cedar	0.0	8.1	4.1	0.0	0.0	0.0	1.4	1.1	0.3	**15.0**
Sugar Pine	0.0	0.0	0.0	1.7	0.0	0.7	0.4	0.7	1.6	**5.1**
White Fir	132.0	32.7	21.0	17.5	9.2	7.3	3.6	2.0	4.4	**229.7**
Summary	**165.0**	**40.8**	**32.8**	**22.1**	**10.0**	**8.6**	**5.8**	**4.1**	**9.1**	**298.3**
>10" dbh			32.8	22.1	10.0	8.6	5.8	4.1	9.1	**92.5**
>19" dbh					10.0	8.6	5.8	4.1	9.1	**37.6**
>30" dbh								4.1	9.1	**13.2**

Potential Treatments for Habitat Type 2 (Dispersal Habitat)

As a result of fire exclusion or harvest, the composition of overstory species in Habitat Type 2 stands has been shifting from Douglas-fir, sugar pine, ponderosa pine, and incense cedar, toward white fir. A dense understory of small white fir trees has filled the gaps created by harvesting, disease, windfall, and other disturbance factors, shifting stands toward less stability and fire resistance.

Pilot projects could take place in Habitat Type 2 stands outside of the Oregon Gulch Research Natural Area (OGRNA). These pilot projects could include thinning from below, prescribed burning, and creating openings around large pine trees.

The following management actions are designed to protect and enhance the late-successional characteristics of Habitat Type 2 stands:

- Design treatments within and adjacent to Habitat Type 2 in order to increase patch size (the amount of contiguous late-successional habitat) and protect un-entered stands and existing owl cores.
- Leave some untreated patches in stands selected for treatment.
- Thin from below to improve canopy structure and mimic pre-fire exclusion species composition.
- Use prescribed burning (usually done in association with thinning) to move vertical and horizontal fuel profiles to pre-fire exclusion levels.
- Promote snags and CWD levels where deficient.
- Vary tree spacing in thinning projects. No canopy layer should be totally removed when thinning from below.
- Green trees designated for removal from the stand may be left standing (girdled) or felled on site and left where existing CWD levels are low.
- Reduce fire hazard by removing ladder fuels (generally white fir understory) adjacent to large trees.
- Use thinning to encourage large trees of ecologically preferred species, size, and vigor.
- Create openings (generally less than 1/4 acre) around and adjacent to pines to provide for regeneration opportunities and to improve the health of these large pines. Larger white fir may be removed in stands where they compete with mature sugar pine and ponderosa pine. These treatments would emphasize retaining and enhancing the existing pine components and promote opportunities for pine regeneration while retaining adequate canopy cover throughout the stands treated.
- Plant blister-rust resistant sugar pine seedlings when planting is necessary.
- Openings around individual or groups of large pines would not take place within northern spotted owl activity centers.

Habitat Type 2 - Descriptions by Ecoregions

Habitat Type 2 – Southern Cascades Ecoregion (4g)

Most stands have been entered for harvest or are younger in age and have smaller trees than Habitat Type 1 stands. Pure white fir stands that have been opened up by thinning are affected by wind throw and pockets of *Phellinus sp.* root rot. Additionally, these stands have become infected with *Annosus sp.* root rot through stumps from previous thinning projects. Over time, all of these factors have contributed to decreased canopy cover.

Multi-species stands which include sugar pine, incense cedar, and white fir are more resilient and show some recovery from harvest disturbance with release of species resistant to root rot after harvest. Multi-species composition stands tend to have more developed canopy levels. Stands are approaching 60 percent canopy cover. Canopy gaps are often filled with species resistant to root rot. Snags and CWD are sometimes deficient in numbers.

Habitat Type 2 – South Cascade Slope Ecoregion (9i)

Ponderosa pine-dominated stands occur on the east side of the Cascades. The sites are generally flat and dry. A Douglas-fir and white fir understory has developed in the absence of fire. Overall, the stands tend to be more open than forest stands in the other ecoregions. Tree diameter is less than in Habitat Type 1. Most of these stands have been entered for harvest and canopy closure has been reduced. The canopy may or may not be single-layered. Snags and CWD are generally deficient due to past management practices.

Habitat Type 2 – Siskiyou Foothills Ecoregion (78b)

Most mixed conifer stands have been entered for harvest. Late-successional and old-growth characteristics are present in varying amounts. Douglas-fir generally fills gaps where large trees have been removed. Dwarf mistletoe on Douglas-fir is common and sometimes heavy due to past logging practices. Canopy closure has been reduced. Although the canopy is generally not single-layered, forest structural diversity is less than in un-entered stands. The mean stand diameter is less than in Habitat Type 1. The vigor of ponderosa pine and black oak trees has decreased due to competition from Douglas-fir and incense cedar. Snags and CWD are sometimes deficient due to past management practices.

Habitat Type 2 – Klamath River Ridges (78g)

Most mixed conifer stands have been entered for harvest. Late-successional and old-growth characteristics are present in varying amounts. Gaps exist where large trees have been removed. White fir commonly fills gaps to the exclusion of pine. Although large trees are still present in these stands, the mean stand diameter and stand age is less than in Habitat Type 1. Many residual trees present are over 80 years old and often exceed 250 years of age. Canopy closure has been reduced. The canopy may or may not be single-layer, but vertical forest structure is reduced and is more open and discontinuous than in un-entered stands. White fir trees grow around residual old-growth conifers. Sugar and ponderosa pine vigor is decreased due to competition with in-grown white fir. Snags and CWD are often deficient.

Potential Treatments for Habitat Type 3 (Young stands)

Following the strategy described in Chapter 2, management actions could potentially take place in all Habitat Type 3 stands. Most of these young stands were artificially established as pine plantations in historic clearcuts. Because of altered natural disturbance regimes (including fire exclusion, the proliferation of pathogens and insects, accelerated fragmentation, and shifts in species composition), many of these stands are on developmental paths that may not provide adequate late-successional and old-growth structure and characteristics. The overall management objective for these young stands is to mimic more closely historic forest development in order to provide structure and habitat for late-successional and old-growth associated species.

Treatments that would be used to promote late-successional and old-growth habitat include the following:

- Density management in young plantations and natural stands would promote the growth and development of desired tree species. Thinning and release efforts could be used to select individual trees specifically for large crowns and limbs, disease resistance (sugar pine rust resistance), selective tree species composition, and other mortality or habitat attributes consistent with OGEA objectives.
- Thinning would favor historic species composition at the stand level. Options will be limited due to the near-monoculture ponderosa pine component present in many of these stands.
- Treatments would include substantially varied spacing in order to provide for the development of late-successional characteristics as quickly as possible. Some areas of heavy canopy closure and structural complexity would be maintained and the growth of a variety of species appropriate to the site and the late-successional and old-growth objectives would be encouraged.
- Prescribed fire is not always an option in Habitat Type 3; trees may be small and susceptible to fire damage. Some limited underburning or pile burning in older pine plantations may be possible after thinning.

Habitat Type 3 - Descriptions by Ecoregion

Habitat Type 3 – Southern Cascades Ecoregion (4g)

Young pine plantations with generally low stocking levels are found at higher elevations in white fir forests. Stocking levels are generally medium or low and not always candidates for thinning. CWD and snags are always deficient due to previous post-harvest burning.

Habitat Type 3 – Southern Cascades Slope Ecoregion (9i)

Very little Habitat Type 3 exists in this ecoregion. Most of the Habitat Type 3 present is young pine plantations.

Habitat Type 3 – Siskiyou Foothills Ecoregion (78b)

This habitat type is represented primarily by mixed conifer species. White fir is generally lacking. Black oak and madrone are common. A few pine plantations are present as well.

Habitat Type 3 – Klamath River Ridges Ecoregion (78g)

This habitat type is represented by mixed conifer advanced reproduction and pine plantations originating from clearcuts in the Lincoln Creek and Rosebud area. Trees are generally less than 25 years old. Tree density is currently too high to allow for the development of late-successional habitat or old growth. Understory vegetation consists of grasses, manzanita, and ceanothus.

Potential Treatments for Habitat Type 5 (Dispersal Habitat)

Habitat Type 5 stands are more varied than Habitat Type 3 as they have often retained some vertical structure, CWD, and variable species composition after logging. Habitat Type 5 stands are commonly the result of partially harvested stands where large old-growth trees were removed. Some Habitat Type 5 stands are characterized by 80 to 120-year-old, overly dense, even-aged trees that resulted from a stand replacement fire. Because of altered natural disturbance regimes – including fire exclusion, the proliferation of pathogens and insects, and shifts in species composition – many of these stands are on developmental paths that may not provide adequate late-successional and old-growth characteristics in the future. The overall objective of stand management would be to mimic more closely historic forest development in order to provide structure and habitat for late-successional and old-growth associated species, and would include the following:

- Thinning from below in order to remove some portion of small suppressed and intermediate-size trees could occur. Trees targeted for removal would generally be the in-growth of small Douglas-fir and white fir that developed during the last 100 years of fire exclusion.
- Thinning would substantially vary the spacing of residual trees in order to (1) provide for the development of late-successional characteristics as quickly as possible; (2) maintain some areas of heavy canopy closure; and (3) enhance structural complexity. Treatments would encourage the growth and development species appropriate to the site in order to promote late-successional and old-growth characteristics.

Habitat Type 5 - Descriptions by Ecoregion

Habitat Type 5 – Southern Cascades Ecoregion (4g)

Forest stands have often been thinned as shelterwoods. Some stands may be open-grown, intertwined with meadows, or exhibit naturally low stocking levels. Stands are open with little canopy development and have few seedlings due to exposure on cold, harsh sites even though canopy cover is greater than 40 percent. Root rot is a problem, particularly in stands dominated by white fir. Windfall is common and stands decrease in stocking levels, canopy closure, and complexity over time, especially in stands dominated by white fir trees. Snags and CWD are deficient due to past management practices.

Habitat Type 5 – Southern Cascades Slope Ecoregion (9i)

Many of these stands were heavily thinned and some were selectively cut to remove larger trees. A few are younger stands or have low tree densities due to disturbance or poor soils, or are intermixed with natural meadows. Stands are open and canopy cover is generally limited with minimal layering. Snags and CWD are often deficient.

Habitat Type 5 – Siskiyou Foothills Ecoregion (78b)

Many of these stands were heavily and selectively thinned. These stands are now composed of heavy brush and hardwoods, as well as residual conifers. Some stands are younger in age than other Type 5 stands and have low tree densities due to disturbance or poor soils. Residual Douglas-fir with dwarf mistletoe were often left in the stand during previous harvests. Canopy cover is generally less than 40 percent with minimal layering. CWD and snags are usually limited.

Habitat Type 5 – Klamath River Ridges Ecoregion (78g)

Many of these stands were more heavily thinned than thinned stands elsewhere in the CSNM and are often a result of shelterwood cuts, overstory removal, or multiple entries. Some are younger stands or have lower tree densities due to disturbance, poor soils, or low-site forest lands. Canopy cover is limited, little layering exists, and understory stocking levels are often poor. Snags and CWD are almost always deficient.

- Thinning would also focus on reducing the density of trees growing in gaps created during previous harvests of old-growth trees.
- Canopy closure is a key component of spotted owl dispersal habitat. Treatments would be designed to retain a canopy sufficient to provide for spotted owl dispersal habitat.
- Pile burning could be used to remove slash resulting from thinning activities conducted in canopy openings. The removal of ladder fuels and pile burning would be conducted in order to protect smaller trees prior to any prescribed underburn.

Snags and Coarse Woody Debris (CWD)

In 1998 sixteen Northern Spotted Owl (NSO) activity centers in the monument were sampled for snags and CWD. The activity centers are distributed quite evenly among the monument's ecoregions. Based on the assumption that the NSO activity centers represent the most functional late successional and old-growth habitat in the monument, the data derived from this study will provide the basis for snag and CWD management for projects in the Old-Growth Emphasis Area. In addition, "Guidelines for Snag and Down Wood Prescriptions in Southwest Oregon" (White 2000) and DecAID (Mellen et al. 2003) would be used in the management of snags and CWD.

APPENDIX I

Standards for Rangeland Health and Guidelines for Livestock Grazing Management

STANDARDS FOR RANGELAND HEALTH AND
GUIDELINES FOR LIVESTOCK GRAZING MANAGEMENT
FOR PUBLIC LANDS ADMINISTERED BY THE
BUREAU OF LAND MANAGEMENT
IN THE STATES OF OREGON AND WASHINGTON

AUGUST 12, 1997

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Standards for Rangeland Health and Guidelines for Livestock Grazing Management for Public Lands in Oregon and Washington

INTRODUCTION

These Standards for Rangeland Health and Guidelines for Livestock Grazing Management for Public Lands in Oregon and Washington were developed in consultation with Resource Advisory Councils and Provincial Advisory Committees, tribes and others. These standards and guidelines meet the requirements and intent of 43 Code of Federal Regulations, Subpart 4180 (Rangeland Health) and are to be used as presented, in their entirety. These standards and guidelines are intended to provide a clear statement of agency policy and direction for those who use public lands for livestock grazing, and for those who are responsible for their management and accountable for their condition. Nothing in this document should be interpreted as an abrogation of Federal trust responsibilities in protection of treaty rights of Indian tribes or any other statutory responsibilities including, but not limited to, the Taylor Grazing Act, the Clean Water Act, and the Endangered Species Act.

FUNDAMENTALS OF RANGELAND HEALTH

The objectives of the rangeland health regulations referred to above are: "to promote healthy sustainable rangeland ecosystems; to accelerate restoration and improvement of public rangelands to properly functioning conditions; . . . and to provide for the sustainability of the western livestock industry and communities that are dependent upon productive, healthy public rangelands."

To help meet these objectives, the regulations on rangeland health identify fundamental principles providing direction to the States, districts, and on-the-ground public land managers and users in the management and use of rangeland ecosystems.

A hierarchy, or order, of ecological function and process exists within each ecosystem. The rangeland ecosystem consists of four primary, interactive components: a physical component, a biological component, a social component, and an economic component. This perspective implies that the physical function of an ecosystem supports the biological health, diversity and productivity of that system. In turn, the interaction of the physical and biological components of the ecosystem provides the basic needs of society and supports economic use and potential.

The Fundamentals of Rangeland Health stated in 43 CFR 4180 are:

1. Watersheds are in, or are making significant progress toward, properly functioning physical condition, including their upland, riparian-wetland, and aquatic components; soil and plant conditions support infiltration, soil moisture storage and the release of water that are in balance with climate and landform and maintain or improve water quality, water quantity and the timing and duration of flow.
2. Ecological processes, including the hydrologic cycle, nutrient cycle and energy flow, are maintained, or there is significant progress toward their attainment, in order to support healthy biotic populations and communities.
3. Water quality complies with State water quality standards and achieves, or is making significant progress toward achieving, established Bureau of Land Management objectives such as meeting wildlife needs.
4. Habitats are, or are making significant progress toward being, restored or maintained for Federal threatened and endangered species, Federal Proposed, Category 1 and 2 Federal candidate and other special status species.

The fundamentals of rangeland health combine the basic precepts of physical function and biological health with elements of law relating to water quality, and plant and animal populations and communities. They provide direction in the development and implementation of the standards for rangeland health.

STANDARDS FOR RANGELAND HEALTH

The standards for rangeland health (standards), based on the above fundamentals, are expressions of the physical and biological condition or degree of function necessary to sustain healthy rangeland ecosystems. Although the focus of these standards is on domestic livestock grazing on Bureau of Land Management lands, on-the-ground decisions must consider the effects and impacts of all uses.

Standards that address the physical components of rangeland ecosystems focus on the roles and interactions of geology and landform, soil, climate and water as they govern watershed function and soil stability. The biological components addressed in the standards focus on the roles and interactions of plants, animals and microbes (producers, consumers and decomposers), and their habitats in the ecosystem. The biological component of rangeland ecosystems is supported by physical function of the system, and it is recognized that biological activity also influences and supports many of the ecosystem's physical functions.

Guidance contained in 43 CFR 4180 of the regulations directs management toward the maintenance or restoration of the physical function and biological health of rangeland ecosystems. Focusing on the basic ecological health and function of rangelands is expected to provide for the maintenance, enhancement, or creation of future social and economic options.

The standards are based upon the ecological potential and capability of each site. In assessing a site's condition or degree of function, it must be understood that the evaluation compares each site to its own potential or capability. Potential and capability are defined as follows:

> **Potential** – The highest level of condition or degree of function a site can attain given no political, social or economic constraints.
>
> **Capability** – The highest level of condition or degree of function a site can attain given certain political, social or economic constraints. For example, these constraints might include riparian areas permanently occupied by a highway or railroad bed that prevent the stream's full access to its original flood plain. If such constraints are removed, the site may be able to move toward its potential.

In designing and implementing management strategies to meet the standards of rangeland health, the potential of the site must be identified, and any constraints recognized, in order that plan goals and objectives are realistic and physically and economically achievable.

STANDARDS AND GUIDELINES IN RELATION TO THE PLANNING PROCESS

The standards apply to the goals of land use plans, activity plans, and project plans (Allotment Management Plans, Annual Operating Plans, Habitat Management Plans, etc.). They establish the physical and biological conditions or degree of function toward which management of publicly-owned rangeland is to be directed. In the development of a plan, direction provided by the standards and the social and economic needs expressed by local communities and individuals are brought together in formulating the goal(s) of that plan.

When the standards and the social and economic goals of the planning participants are woven together in the plan goal(s), the quantifiable, time specific objective(s) of the plan are then developed. Objectives describe and quantify the desired future conditions to be achieved within a specified timeframe. Each plan objective should address the physical, biological, social and economic elements identified in the plan goal.

Standards apply to all ecological sites and land forms on public rangelands throughout Oregon and Washington. The standards require site-specific information for full on-ground usability. For each standard, a set of indicators is identified for use in tailoring the standards to site-specific situations. These indicators are used for rangeland ecosystem assessments and monitoring and for developing terms and conditions for permits and leases that achieve the plan goal.

Guidelines for livestock grazing management offer guidance in achieving the plan goal and objectives. The guidelines outline practices, methods, techniques and considerations used to ensure that progress is achieved in a way, and at a rate, that meets the plan goal and objectives.

INDICATORS OF RANGELAND HEALTH

The condition or degree of function of a site in relation to the standards and its trend toward or away from any standard is determined through the use of reliable and scientifically sound indicators. The consistent application of such indicators can provide an objective view of the condition and trend of a site when used by trained observers.

For example, the amount and distribution of ground cover can be used to indicate that infiltration at the soil surface can take place as described in the standard relating to upland watershed function. In applying this indicator, the specific levels of plant cover necessary to support infiltration in a particular soil should be identified using currently available information from reference areas, if they exist; from technical sources like soil survey reports, Ecological Site Inventories, and Ecological Site Descriptions, or from other existing reference materials. Reference areas are lands that best represent the potential of a specific ecological site in both physical function and biological health. In many instances potential reference areas are identified in Ecological Site Descriptions and are referred to as “type locations.” In the absence of suitable reference areas, the selection of indicators to be used in measuring or judging condition or function should be made by an interdisciplinary team of experienced professionals and other trained individuals.

Not all indicators identified for each standard are expected to be employed in every situation. Criteria for selecting appropriate indicators and methods of measurement and observation include, but are not limited to: 1. the relationship between the attribute(s) being measured or observed and the desired outcome; 2. the relationship between the activity (e.g., livestock grazing) and the attribute(s) being measured or observed; and 3. funds and workforce available to conduct the measurements or observations.

ASSESSMENTS AND MONITORING

The standards are the basis for assessing and monitoring rangeland condition and trend. Carrying out well-designed assessment and monitoring is critical to restoring or maintaining healthy rangelands and determining trends and conditions.

Assessments are a cursory form of evaluation based on the standards that can be used at different landscape scales. Assessments, conducted by qualified interdisciplinary teams (which may include but are not limited to physical, biological and social specialists, and interagency personnel) with participation from lessees and other interested parties, are appropriate at the watershed and sub-watershed levels, at the allotment and pasture levels and on individual ecological sites or groups of sites. Assessments identify the condition or degree of function within the rangeland ecosystem and indicate resource problems and issues that should be monitored or studied in more detail. The results of assessments are a valuable tool for managers in assigning priorities within an administrative area and the subsequent allocation of personnel, money and time in resource monitoring and treatment. The results of assessments may also be used in making management decisions where an obvious problem exists.

Monitoring, which is the well documented and orderly collection, analysis and interpretation of resource data, serves as the basis for determining trends in the condition or degree of function of rangeland resources and for making management decisions. Monitoring should be designed and carried out to identify trends in resource conditions, to point out resource problems, to help indicate the cause of such problems, to point out solutions, and/or to contribute to adaptive management decisions. In cases where monitoring data do not exist, professional judgement, supported by interdisciplinary team recommendation, may be relied upon by the authorized officer in order to take necessary action. Review and evaluation of new information must be an ongoing activity.

To be effective, monitoring must be consistent over time, throughout administrative areas, and in the methods of measurement and observation of selected indicators. Those doing the monitoring must have the knowledge and skill required by the level or intensity of the monitoring being done, as well as the experience to properly interpret the results. Technical support for training must be made available.

MEASURABILITY

It is recognized that not every area will immediately meet the standards and that it will sometimes be a long-term process to restore some rangelands to properly functioning condition. It is intended that in cases where standards are not being met, measurable progress should be made toward achieving those standards, and significant progress should be made toward fulfilling the fundamentals of rangeland health. Measurability is defined on a case-specific basis based upon the stated planning objectives (i.e., quantifiable, time specific), taking into account economic and social goals along with the biological and ecological capability of the area. To the extent that a rate of recovery conforms with the planning objectives, the area is allowed the time to meet the standard under the selected management regime.

IMPLEMENTATION

The material contained in this document will be incorporated into existing Land Use Plans and used in the development of new Land Use Plans. According to 43 CFR 4130.3-1, permits and leases shall incorporate terms and conditions that ensure conformance with 43 CFR 4180. Terms and conditions of existing permits and leases will be modified to reflect standards and guidelines at the earliest possible date with priority for modification being at the discretion of the authorized officer. Terms and conditions of new permits and leases will reflect standards and guidelines in their development.

Indicators identified in this document will serve as a focus of interpretation of existing monitoring data and will provide the basis of design for monitoring and assessment techniques, and in the development of monitoring and assessment plans.

The authorized officer shall take appropriate action as soon as practicable but not later than the start of the next grazing year upon determining, through assessment or monitoring by experienced professionals and interdisciplinary teams, that a standard is not being achieved and that livestock are a significant contributing factor to the failure to achieve the standards and conform with the guidelines.

STANDARDS FOR RANGELAND HEALTH

Standard 1 Watershed Function – Uplands

Upland soils exhibit infiltration and permeability rates, moisture storage and stability that are appropriate to soil, climate and landform.

Rationale and Intent

This standard focuses on the basic physical functions of upland soils that support plant growth, the maintenance or development of plant populations and communities, and promote dependable flows of quality water from the watershed.

To achieve and sustain rangeland health, watersheds must function properly. Watersheds consist of three principle components: the uplands, riparian/wetland areas and the aquatic zone. This standard addresses the upland component of the watershed. When functioning properly, within its potential, a watershed captures, stores and safely releases the moisture associated with normal precipitation events (equal to or less than the 25 year, 5 hour event) that falls within its boundaries. Uplands make up the largest part of the watershed and are where most of the moisture received during precipitation events is captured and stored.

While all watersheds consist of similar components and processes, each is unique in its individual makeup. Each watershed displays its own pattern of landform and soil, its unique climate and weather patterns, and its own history of use and current condition. In directing management toward achieving this standard, it is essential to treat each unit of the landscape (soil, ecological site, and watershed) according to its own capability and how it fits with both smaller and larger units of the landscape.

A set of potential indicators has been identified for which site-specific criteria will be used to determine if this standard is being met. The appropriate indicators to be used in determining attainment of the standard should be drawn from the following list.

Potential Indicators

Protection of the soil surface from raindrop impact; detention of overland flow; maintenance of infiltration and permeability, and protection of the soil surface from erosion, consistent with the potential/ capability of the site, as evidenced by the:

- amount and distribution of plant cover (including forest canopy cover);
- amount and distribution of plant litter;
- accumulation/incorporation of organic matter;
- amount and distribution of bare ground;
- amount and distribution of rock, stone, and gravel;
- plant composition and community structure;
- thickness and continuity of A horizon;
- character of micro-relief;
- presence and integrity of biotic crusts;
- root occupancy of the soil profile;
- biological activity (plant, animal, and insect); and
- absence of accelerated erosion and overland flow.

Soil and plant conditions promote moisture storage as evidenced by:

- amount and distribution of plant cover (including forest canopy cover);
- amount and distribution of plant litter;
- plant composition and community structure; and
- accumulation/incorporation of organic matter.

Standard 2 Watershed Function - Riparian/Wetland Areas

Riparian-wetland areas are in properly functioning physical condition appropriate to soil, climate, and landform.

Rationale and Intent

Riparian-wetland areas are grouped into two major categories: 1. lentic, or standing water systems such as lakes, ponds, seeps, bogs, and meadows; and 2. lotic, or moving water systems such as rivers, streams, and springs. Wetlands are areas that are inundated or saturated by surface or ground water at a frequency and duration to support, and which under normal circumstances do support, a prevalence of vegetation typically adapted to life in saturated soil conditions. Riparian areas commonly occupy the transition zone between the uplands and surface water bodies (the aquatic zone) or permanently saturated wetlands.

Properly functioning condition of riparian and wetland areas describes the degree of physical function of these components of the watershed. Their functionality is important to water quality in the capture and retention of sediment and debris, the detention and detoxification of pollutants, and in moderating seasonal extremes of water temperature. Properly functioning riparian areas and wetlands enhance the timing and duration of streamflow through dissipation of flood energy, improved bank storage, and ground water recharge. Properly functioning condition should not be confused with the Desired Plant Community (DPC) or the Desired Future Condition (DFC) since, in most cases, it is the precursor to these levels of resource condition and is required for their attainment.

A set of indicators has been identified for which site-specific criteria will be used to determine if this standard is being met. The criteria are based upon the potential (or upon the capability where potential cannot be achieved) of individual sites or land forms.

Potential Indicators

Hydrologic, vegetative, and erosional/depositional processes interact in supporting physical function, consistent with the potential or capability of the site, as evidenced by:

- frequency of floodplain/wetland inundation;
- plant composition, age class distribution, and community structure;
- root mass;
- point bars revegetating;
- streambank/shoreline stability;
- riparian area width;
- sediment deposition;
- active/stable beaver dams;
- coarse/large woody debris;
- upland watershed conditions;
- frequency/duration of soil saturation; and
- water table fluctuation.

Stream channel characteristics are appropriate for landscape position as evidenced by:

- channel width/depth ratio;
- channel sinuosity;
- gradient;
- rocks and coarse and/or large woody debris;
- overhanging banks;
- pool/riffle ratio;
- pool size and frequency; and
- stream embeddedness.

Standard 3 Ecological Processes

Healthy, productive and diverse plant and animal populations and communities appropriate to soil, climate and landform are supported by ecological processes of nutrient cycling, energy flow and the hydrologic cycle.

Rationale and Intent

This standard addresses the ecological processes of energy flow and nutrient cycling as influenced by existing and desired plant and animal communities without establishing the kinds, amounts or proportions of plant and animal community compositions. While emphasis may be on native species, an ecological site may be capable of supporting a number of different native and introduced plant and animal populations and communities while meeting this standard. This standard also addresses the hydrologic cycle which is essential for plant growth and appropriate levels of energy flow and nutrient cycling. Standards 1 and 2 address the watershed aspects of the hydrologic cycle.

With few exceptions, all life on earth is supported by the energy supplied by the sun and captured by plants in the process of photosynthesis. This energy enters the food chain when plants are consumed by insects and herbivores and passes upward through the food chain to the carnivores. Eventually, the energy reaches the decomposers and is released as the thermal output of decomposition or through oxidation.

The ability of plants to capture sunlight energy, to grow and develop, to play a role in soil development and watershed function, to provide habitat for wildlife and to support economic uses depends on the availability of nutrients and moisture. Nutrients necessary for plant growth are made available to plants through the decomposition and metabolization of organic matter by insects, bacteria and fungi, the weathering of rocks and extraction from the atmosphere. Nutrients are transported through the soil by plant uptake, leaching and by rodent, insect and microbial activity. They follow cyclical patterns as they are used and reused by living organisms.

The ability of rangelands to supply resources and satisfy social and economic needs depends on the buildup and cycling of nutrients over time. Interrupting or slowing nutrient cycling can lead to site degradation, as these lands become increasingly deficient in the nutrients plants require.
Some plant communities, because of past use, frequent fire or other histories of extreme or continued disturbance, are incapable of meeting this standard. For example, shallow-rooted winter-annual grasses that completely dominate some sites do not fully occupy the potential rooting depth of some soils, thereby reducing nutrient cycling well below optimum levels. In addition, these plants have a relatively short growth period and thus capture less sunlight than more diverse plant communities. Plant communities like those cited in this example are considered to have crossed the threshold of recovery and often require great expense to be recovered. The cost of recovery must be weighed against the site's potential ecological/economic value in establishing treatment priorities.

The role of fire in natural ecosystems should be considered, whether it acts as a primary driver or only as one of many factors. It may play a significant role in both nutrient cycling and energy flows.

A set of indicators has been identified for which site-specific criteria will be used to determine if this standard is being met.

Potential Indicators

Photosynthesis is effectively occurring throughout the potential growing season, consistent with the potential/capability of the site, as evidenced by plant composition and community structure.

Nutrient cycling is occurring effectively, consistent with the potential/capability of the site, as evidenced by:

- plant composition and community structure;
- accumulation, distribution, incorporation of plant litter and organic matter into the soil;
- animal community structure and composition;
- root occupancy in the soil profile; and
- biological activity including plant growth, herbivory, and rodent, insect and microbial activity.

Standard 4 Water Quality

Surface water and groundwater quality, influenced by agency actions, complies with State water quality standards.

Rationale and Intent

The quality of the water yielded by a watershed is determined by the physical and chemical properties of the geology and soils unique to the watershed, the prevailing climate and weather patterns, current resource conditions, the uses to which the land is put and the quality of the management of those uses. Standards 1, 2 and 3 contribute to attaining this standard.

States are legally required to establish water quality standards and Federal land management agencies are to comply with those standards. In mixed ownership watersheds, agencies, like any other land owners, have limited influence on the quality of the water yielded by the watershed. The actions taken by the agency will contribute to meeting State water quality standards during the period that water crosses agency administered holdings.

Potential Indicators

Water quality meets applicable water quality standards as evidenced by:

- water temperature;
- dissolved oxygen;
- fecal coliform;
- turbidity;
- pH;
- populations of aquatic organisms; and
- effects on beneficial uses (i.e., effects of management activities on beneficial uses as defined under the Clean Water Act and State implementing regulations).

Standard 5 Native, T&E, and Locally Important Species

Habitats support healthy, productive and diverse populations and communities of native plants and animals (including special status species and species of local importance) appropriate to soil, climate and landform.

Rationale and Intent

Federal agencies are mandated to protect threatened and endangered species and will take appropriate action to avoid the listing of any species. This standard focuses on retaining and restoring native plant and animal (including fish) species, populations and communities (including threatened, endangered and other special status species and species of local importance). In meeting the standard, native plant communities and animal habitats would be spatially distributed across the landscape with a density and frequency of species suitable to ensure reproductive capability and sustainability. Plant populations and communities would exhibit a range of age classes necessary to sustain recruitment and mortality fluctuations.

Potential Indicators

- essential habitat elements for species, populations and communities are present and available, consistent with the potential/capability of the landscape, as evidenced by:
- plant community composition, age class distribution, productivity;
- animal community composition, productivity;
- habitat elements;
- spatial distribution of habitat;
- habitat connectivity; and
- population stability/resilience.

GUIDELINES FOR LIVESTOCK GRAZING MANAGEMENT

Guidelines for livestock grazing management offer guidance in achieving plan goals, meeting standards for rangeland health and fulfilling the fundamentals of rangeland health. Guidelines are applied in accordance with the capabilities of the resource in consultation, cooperation, and coordination with lessees and the interested public. Guidelines enable managers to adjust grazing management on public lands to meet current and anticipated climatic and biological conditions.

General Guidelines

1. Involve diverse interests in rangeland assessment, planning and monitoring.
2. Assessment and monitoring are essential to the management of rangelands, especially in areas where resource problems exist or issues arise. Monitoring should proceed using a qualitative method of assessment to identify critical, site-specific problems or issues using interdisciplinary teams of specialists, managers, and knowledgeable land users.

Once identified, critical, site-specific problems or issues should be targeted for more intensive, quantitative monitoring or investigation. Priority for monitoring and treatment should be given to those areas that are ecologically at-risk where benefits can be maximized given existing budgets and other resources.

Livestock Grazing Management

1. The season, timing, frequency, duration and intensity of livestock grazing use should be based on the physical and biological characteristics of the site and the management unit in order to:
    a. provide adequate cover (live plants, plant litter and residue) to promote infiltration, conserve soil moisture and to maintain soil stability in upland areas;
    b. provide adequate cover and plant community structure to promote streambank stability, debris and sediment capture, and floodwater energy dissipation in riparian areas.
    c. promote soil surface conditions that support infiltration;
    d. avoid sub-surface soil compaction that retards the movement of water in the soil profile;
    e. help prevent the increase and spread of noxious weeds;
    f. maintain or restore diverse plant populations and communities that fully occupy the potential rooting volume of the soil;
    g. maintain or restore plant communities to promote photosynthesis throughout the potential growing season;
    h. promote soil and site conditions that provide the opportunity for the establishment of desirable plants;
    i. protect or restore water quality; and
    j. provide for the life cycle requirements, and maintain or restore the habitat elements of native (including T&E, special status, and locally important species) and desired plants and animals.
2. Grazing management plans should be tailored to site-specific conditions and plan objectives. Livestock grazing should be coordinated with the timing of precipitation, plant growth and plant form. Soil moisture, plant growth stage and the timing of peak stream flows are key factors in determining when to graze. Response to different grazing strategies varies with differing ecological sites.
3. Grazing management systems should consider nutritional and herd health requirements of the livestock.
4. Integrate grazing management systems into the year-round management strategy and resources of the permittee(s) or lessee(s). Consider the use of collaborative approaches (e.g., Coordinated Resource Management, Working Groups) in this integration.
5. Consider competition for forage and browse among livestock, big game animals, and wild horses in designing and implementing a grazing plan.
6. Provide periodic rest from grazing for rangeland vegetation during critical growth periods to promote plant vigor, reproduction and productivity.
7. Range improvement practices should be prioritized to promote rehabilitation and resolve grazing concerns on transitory grazing land.
8. Consider the potential for conflict between grazing use on public land and adjoining land uses in the design and implementation of a grazing management plan.

Facilitating the Management of Livestock Grazing

1. The use of practices to facilitate the implementation of grazing systems should consider the kind and class of animals managed, indigenous wildlife, wild horses, the terrain and the availability of water. Practices such as fencing, herding, water development, and the placement of salt and supplements (where authorized) are used where appropriate to:
    a. promote livestock distribution;

   b. encourage a uniform level of proper grazing use throughout the grazing unit;
   c. avoid unwanted or damaging concentrations of livestock on streambanks, in riparian areas and other sensitive areas such as highly erodible soils, unique wildlife habitats and plant communities; and
   d. protect water quality.
2. Roads and trails used to facilitate livestock grazing are constructed and maintained in a manner that minimizes the effects on landscape hydrology; concentration of overland flow, erosion and sediment transport are prevented; and subsurface flows are retained.

Accelerating Rangeland Recovery

1. Upland treatments that alter the vegetative composition of a site, like prescribed burning, juniper management and seedings or plantings must be based on the potential of the site and should:
   a. retain or promote infiltration, permeability, and soil moisture storage;
   b. contribute to nutrient cycling and energy flow;
   c. protect water quality;
   d. help prevent the increase and spread of noxious weeds;
   e. contribute to the diversity of plant communities, and plant community composition and structure;
   f. support the conservation of T&E, other special status species and species of local importance; and
   g. be followed up with grazing management and other treatments that extend the life of the treatment and address the cause of the original treatment need.
2. Seedings and plantings of non-native vegetation should only be used in those cases where native species are not available in sufficient quantities; where native species are incapable of maintaining or achieving the standards; or where non-native species are essential to the functional integrity of the site.
3. Structural and vegetative treatments and animal introductions in riparian and wetland areas must be compatible with the capability of the site, including the system's hydrologic regime, and contribute to the maintenance or restoration of properly functioning condition.

Glossary

Appropriate action–implementing actions pursuant to subparts 4110, 4120, 4130 and 4160 of the regulations that will result in significant progress toward fulfillment of the standards and significant progress toward conformance with the guidelines (see significant progress below).

Assessment–a form of evaluation based on the standards of rangeland health, conducted by an interdisciplinary team at the appropriate landscape scale (pasture, allotment, sub-watershed, watershed, etc.) to determine conditions relative to standards.

Compaction layer–a layer within the soil profile in which the soil particles have been rearranged to decrease void space, thereby increasing soil bulk density and often reducing permeability.

Crust, Abioti–(physical crust) a surface layer on soils, ranging in thickness from a few millimeters to a few centimeters, that is much more compact, hard and brittle, when dry, than the material immediately beneath it.

Crust, Bioti–(microbiotic or cryptogamic crust) a layer of living organisms (mosses, lichens, liverworts, algae, fungi, bacteria, and/or cyanobacteria) occurring on, or near the soil surface.

Degree of function–a level of physical function relative to properly functioning condition commonly expressed as: properly functioning, functioning-at-risk, or non-functional.

Diversity–the aggregate of species assemblages (communities), individual species, and the genetic variation within species and the processes by which these components interact within and among themselves. The elements of diversity are: 1. community diversity (habitat, ecosystem), 2. species diversity; and 3. genetic diversity within a species; all three of which change over time.

Energy flow–the processes in which solar energy is converted to chemical energy through photosynthesis and passed through the food chain until it is eventually dispersed through respiration and decomposition.

Groundwater–water in the ground that is in the zone of saturation; water in the ground that exists at, or below the water table.

Guideline–practices, methods, techniques and considerations used to ensure that progress is made in a way and at a rate that achieves the standard(s).

Gully–a channel resulting from erosion and caused by the concentrated but intermittent flow of water usually during and immediately following heavy rains.

Hydrologic cycle–the process in which water enters the atmosphere through evaporation, transpiration, or sublimation from the oceans, other surface water bodies, or from the land and vegetation, and through condensation and precipitation returns to the earth's surface. The precipitation then occurring as overland flow, stream flow, or percolating underground flow to the oceans or other surface water bodies or to other sites of evapo-transpiration and recirculation to the atmosphere.

Indicators–parameters of ecosystem function that are observed, assessed, measured, or monitored to directly or indirectly determine attainment of a standard(s).

Infiltration–the downward entry of water into the soil.

Infiltration rate–the rate at which water enters the soil.

Nutrient cycling–the movement of essential elements and inorganic compounds between the reservoir pool (soil, for example) and the cycling pool (organisms) in the rapid exchange (i.e., moving back and forth) between organisms and their immediate environment.

Organic matter–plant and animal residues accumulated or deposited at the soil surface; the organic fraction of the soil that includes plant and animal residues at various stages of decomposition; cells and tissues of soil organisms, and the substances synthesized by the soil population.

Permeability–the ease with which gases, liquids or plant roots penetrate or pass through a bulk mass of soil or a layer of soil.

Properly functioning condition–

Riparian-wetland: adequate vegetation, landform, or large (coarse) woody debris is present to dissipate stream energy associated with high water flows, thereby reducing erosion and improving water quality; filter sediment, capture bedload, and aid in flood plain development; improve flood-water retention and ground water recharge; develop root masses that stabilize streambanks against cutting action; develop diverse channel and ponding characteristics to provide the habitat and water depth, duration and temperature necessary for fish production, waterfowl breeding, and other uses; and support greater biodiversity. The result of interaction among geology, soil, water, and vegetation.

Uplands: soil and plant conditions support the physical processes of infiltration and moisture storage and promote soil stability (as appropriate to site potential); includes the production of plant cover and the accumulation of plant residue that protect the soil surface from raindrop impact, moderate soil temperature in minimizing frozen soil conditions (frequency, depth, and duration), and the loss of soil moisture to evaporation; root growth and development in the support of permeability and soil aeration. The result of interaction among geology, climate, landform, soil, and organisms.

Proper grazing use–grazing that, through the control of timing, frequency, intensity and duration of use, meets the physiological needs of the desirable vegetation, provides for the establishment of desirable plants and is in accord with the physical function and stability of soil and landform (properly functioning condition).

Reference area–sites that, because of their condition and degree of function, represent the ecological potential or capability of similar sites in an area or region (ecological province); serve as a benchmark in determining the ecological potential of sites with similar soil, climatic, and landscape characteristics.

Rill–a small, intermittent water course with steep sides; usually only a few inches deep.

Riparian area–a form of wetland transition between permanently saturated wetlands and upland areas. These areas exhibit vegetation or physical characteristics reflective of permanent surface or subsurface water influence. Lands along, adjacent to, or contiguous with perennially and intermittently flowing rivers and stream, glacial potholes, and shores of lakes and reservoirs with stable water levels area typical riparian areas. Excluded are such sites as ephemeral streams or washes that do not exhibit the presence of vegetation dependent upon free water in the soil. Includes, but is not limited to, jurisdictional wetlands.

Significant progress–when used in reference to achieving a standard: (actions), the necessary land treatments, practices and/or changes to management have been applied or are in effect; (rate), a rate of progress that is consistent with the anticipated recovery rate described in plan objectives, with due recognition of the effects of climatic extremes (drought, flooding, etc.), fire, and other unforeseen naturally occurring events or disturbances. Monitoring reference areas that are ungrazed and properly grazed may provide evidence of appropriate recovery rates. (See Proper Grazing Use)

Soil density–(bulk density)--the mass of dry soil per unit bulk volume.

Soil moisture–water contained in the soil; commonly used to describe water in the soil above the water table.

Special status species–species proposed for listing, officially listed (T/E), or candidates for listing as threatened or endangered by the Secretary of the Interior under the provisions of the Endangered Species Act; those listed or proposed for listing by the State in a category implying potential endangerment or extinction; those designated by each Bureau of Land Management State Director as sensitive.

Species of local importance–species of significant importance to Native American populations (e.g., medicinal and food plants).

Standard–an expression of the physical and biological condition or degree of function necessary to sustain healthy rangeland ecosystems.

Uplands–lands that exist above the riparian/wetland area, or active flood plains of rivers and streams; those lands not influenced by the water table or by free or unbound water; commonly represented by toe slopes, alluvial fans, and side slopes, shoulders and ridges of mountains and hills.

Watershed–an area of land that contributes to the surface flow of water past a given point. The watershed dimensions are determined by the point past, or through which, runoff flows.

Watershed function–the principal functions of a watershed include the capture of moisture contributed by precipitation; the storage of moisture within the soil profile, and the release of moisture through subsurface flow, deep percolation to groundwater, evaporation from the soil, and transpiration by live vegetation.

Wetland–areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and which under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions.

Uplands–lands that exist above the riparian wetland area, or active flood plain of a river, and those lands not influenced by the water table or by free or unbound water, commonly represented by toe slopes, alluvial fans, and side slopes, shoulders and ridges of mountains and hills.

Watershed–an area of land that contributes to the surface flow of water past a given point. The watershed dimensions are determined by the point past or through which runoff flows.

Watershed function–the principal functions of a watershed include the capture of moisture contributed by precipitation, the storage of moisture within the soil profile, and the release of moisture through subsurface flow, deep percolation to groundwater, evaporation from the soil, and transpiration by the vegetation.

Wetland–areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and which under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions.

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INTRODUCTION

The presidential proclamation for the Cascade-Siskiyou National Monument (CSNM) calls for protecting the objects considered special to the monument. These include Greene's mariposa lily, Gentner's fritillary, Bellingers meadowfoam, populations of long-isolated fish species, special plant communities (rosaceous chaparral and Oregon white oak-juniper woodlands), mixed conifer, winter deer habitat, old-growth conifer habitat crucial for spotted owl, as well as the diversity of butterfly and snail species associated with the assemblage of plant communities dispersed across the landscape.

The call to consider ecosystem dynamics (change over time) and ecosystem integrity (whether all the components of the ecosystem are present and functioning) requires the Bureau of Land Management (BLM) to consider biological objects and ecosystem variables relative to the range of processes occurring within the CSNM landscape. The monitoring of key species and variables indicative of ecosystem functioning is critical to understanding the health of the ecosystems within the monument. While most monitoring projects identified in this appendix contribute to an understanding of ecological integrity and ecosystem functioning, there are other important processes that need to be monitored; these include forest succession, weed invasion, hydrology, and monitoring of individual species considered indicative of habitat conditions required by a broader suite of species.

Of particular concern within the monument is the impact of livestock on the biological elements considered characteristic of the CSNM and mentioned within the presidential proclamation. The ongoing livestock impact study will address these concerns.

There are four primary categories of monitoring needed to assess the array of resources and potential impacts of management actions throughout the CSNM. Monitoring within each category is necessary to provide a comprehensive ecological perspective at the landscape scale. Each of the four monitoring efforts is described below:

Baseline Data

Forest systems in the monument will be monitored to determine trends related to disturbance agents such as insects, disease, and fire. Landscape-level plant community surveys will be conducted on the ground and supported by satellite imagery in order to determine long-term trends. Baseline data gathering methodologies will be initiated as soon as possible.

Historical Plant Community Change

Several monitoring projects and surveys are planned to provide a better understanding of historical and more recent impacts of livestock, human, and natural disturbance on ecosystem dynamics across the CSNM landscape. Monitoring and surveying will be conducted to examine present landscape-level conditions, past plant community changes, the distribution of special plant community/wildlife habitat, and noxious weed invasion. Aerial and satellite imagery may provide additional baseline data with which to conduct future, more detailed examinations of the above dynamics.

Landscape-level surveys of plant community, wildlife habitat, weed abundance, surface hydrology, riparian condition, and livestock utilization will provide the context for more intense monitoring at specific sites on the landscape. Full use is being made of existing data to provide seamless maps of plant communities across the CSNM landscape.

Fence-line contrasts and existing livestock exclosures coupled with ground-nesting bird surveys will allow limited assessment of past plant community change and wildlife nesting habitat associated with livestock impact. A re-examination of vegetation plots associated with old soil and vegetation surveys will allow further assessment of long-term change for the range of plant communities within the monument. Aerial photos taken in 1939 will provide visual evidence of change at specific locations within the CSNM.

Ecosystem Dynamics

Several projects will provide insight to ecosystem dynamics as defined by the proclamation. Inference about ecosystem dynamics will be obtained through studies of insect and arthropod populations, changes in plant community composition, weed invasion, coarse woody debris, tree vigor and disease, and insects within spotted owl cores and adjacent areas, within the context of past disturbance and ecological process (timber harvest, grazing, wildland fire, weed invasion, etc.).

Monitoring of Management Activities

The monument supports a variety of forest and non-forest plant communities with changing compositional and structural characteristics. Any activities initiated within the monument that change or affect plant communities require monitoring and research that support or validate management objectives. Issues related to this are grass/shrubs/woodland plant community health, forest health, and livestock grazing. Plant community trends need to be measured with the best technology available in a manner that will identify environmental processes over time, creating a long-term archive in the process.

Future management activities (prescribed fire, weed eradication, small tree thinning, etc.) will be monitored using permanently marked monitoring sites following standard protocols established for the CSNM. Where feasible, care will be taken to establish monitoring protocols that are compatible with existing data.

INDIVIDUAL MONITORING PROJECTS CONTRIBUTING TO UNDERSTANDING THE CSNM LANDSCAPE: TERRESTRIAL

Habitat Type 1 & 2 vs. 5, Effectiveness Monitoring

Introduction

The purpose of this project is to establish long-term, permanent plots using forest stand data and Firemon data. Habitat Types 1, 2, and 5 compare trends with management at the project level. The existing or pretreatment information will be the baseline data for monitoring treatments and trends in CSNM. Various pre- and post-treatment stand density, growth and fuels data, etc., will help to determine effectiveness in meeting goals and objectives during management activities.

Objectives

Objective 1:	Monitor stand structural characteristics, stocking levels, canopy, fuels, CWD and snags over time.
Objective 2:	Determine effectiveness in meeting protection and maintenance goals after treatments.
Objective 3:	Use information to further assist decision making and planning future activities.

Methods and Materials

Establish plots in the habitat types during designed projects in order to monitor post-treatment effects such as fire and thinning activities. Use BLM stand exam to collect data and maintain database. Use Firemon data for post-fire effects.

Analytical Process

Compare pre- and post-treatment data and any other information available using existing forest, fuels or botany data systems available.

Root Rot Incidence and Insect Activity in CSNM

Introduction

Root rots and insects, especially bark beetles, are common agents of disturbance in CSNM. This will be a project aimed at developing baseline data in determining the location of and the extent to which root rots and beetles are affecting forest stands in the monument.

Objectives

Objective 1: The insect and root rot baseline data would be linked to annual aerial flights to assist in tracking trends and aiding in decision-making in the monument.

Methods and Materials

Annual flights will continue to map out insect occurrence in CSNM. Locations will be field checked. Root rot occurrence and severity has been and will continue to be added to the database as inventory work is accomplished.

Analytical Process

Develop maps, determine severity, link to effectiveness monitoring involving established plots and input into the decision-making process for prioritizing treatments in forest stands. Specifically, protection of late-successional and old-growth habitat types is desired.

INDIVIDUAL MONITORING PROJECTS CONTRIBUTING TO UNDERSTANDING THE CSNM LANDSCAPE: AQUATIC (PHYSICAL AND BIOLOGICAL)

Landscape Hydrologic/Riparian Surveys

Introduction

Management, protection, and monitoring of aquatic/riparian resources can only be accomplished if the location of those resources is known. Detection of change in many of those resources, especially due to the site-specific nature of many aquatic/riparian features, can be accomplished only through the collection of existing-condition data, and then monitoring change over time.

Objectives

Objective 1: Provide general hydrologic/riparian spatial information, morphologic description, flow regime, and ecological condition, as context for other studies, input to transportation planning, and protection of aquatic/riparian objects identified. Will serve as baseline for long-term monitoring.

Objective 2: Provide data to assist in assessment of all Aquatic Conservation Strategy (ACS) objectives.

Methods and Materials

Location, flow duration, channel classification/morphology data for streams, wetlands, and other hydrologic features; instream large wood; impact descriptions and restoration opportunities, especially related to livestock, transportation, and vegetation throughout the monument. Assess functioning condition. Conduct surveys using the Ashland Resource Area Stream Survey Protocol. On BLM lands within the monument, initial data collection in the Keene Creek and a portion of the middle Jenny Creek subwatersheds was completed in 1999; portions in the upper Emigrant Creek subwatershed were completed in 2000. Portions in Fall, Camp, Scotch, upper Cottonwood, lower Cottonwood, upper Jenny, lower Jenny, and the remainder of middle Jenny Creek subwatersheds are proposed for initial data collection. Surveys would be repeated at 10-25 year intervals.

Baseline Stream Temperature Monitoring

Introduction

Changes in vegetative cover, channel dimensions, and bank/floodplain water storage are known to influence stream temperatures. Changes in riparian management, upland management to increasingly protect riparian resources, and cooperative restoration activities targeted at meeting ACS objectives and state water quality standards should lead to detectable changes in summer stream temperature at locations throughout and adjacent to the CSNM as stream and riparian function improves.

Objectives

Objective 1: Monitor for long-term changes in stream temperatures, as context for judging success of riparian/aquatic management, restoration, and protection.

Objective 2: Provide data to assist in assessment of ACS objectives 2, 4, and 9, for assessment of compliance with state water quality standards, and to assist in development of State of Oregon/EPA-required Water Quality Management Plans for this area.

Methods and Materials

Collect seasonal 30-minute interval stream temperature data using USGS and Oregon DEQ-established methodologies. Collect data at 13 existing and 10 proposed sites in addition to the 9 project-specific sites listed above.

Gaging Station and Staff Gages: Flow and Water Quality Assessment

Introduction

Calculation and assessment of peak, high, and low flows is extremely difficult without actual field measurement and reference over time. Flow data is also required for the meaningful analysis of water quality parameters. Because of rapid fluctuation in stream levels, continuous records are required at a key location to interpret data collected in non-continuous sampling from other locations.

Objectives

Objective 1: Provide flow and water quality information at key locations as context for other types of aquatic condition assessment.

Objective 2: Provide data to assist in the assessment of ACS objectives 1, 2, 4, 5, 6, 7, and 8, and to monitor compliance with state water quality standards.

Methods and Materials

Perform monthly grab sample collection of turbidity, air temperature, H2O temperature, pH, flow, fecal coliform, and dissolved oxygen at 11 existing and five proposed locations. Do a continuous record (15-minute interval) of stream stage, water and air temperature at one location. Standard methods will be undertaken using USGS, Oregon DEQ and EPA approved protocols.

Stream Channel Cross Sections Throughout the CSNM

Introduction

Calculation and assessment of peak, high, and low flows is extremely difficult without actual field measurement and reference over time. Flow data is also required for the meaningful analysis of water quality parameters. Cross-sections provide a reference point from which to document changes in channel morphology, conduct flow measurements, and estimate flood flows. Documentation of changes in channel morphology provides an indication of stability and functioning of the upstream surface hydrologic system.

Objectives

Objective 1: Provide site-specific trend of width/depth ratios, entrenchment, and other indicators of channel form, and provide reference points for assessment of large flood flows.

Objective 2: Provide data to assist in the assessment of ACS objectives 1, 2, 3, 5, 6, 7, and 8.

Methods and Materials

Perform cross-section measurement to calculate entrenchment, width/depth ratio; bankfull channel length to calculate slope and sinuosity. Measurement methodologies will include standard cadastral survey techniques and those outlined in Rosgen (1996). Twelve existing and five proposed monumented sites measured at ~5-year intervals and after major flood events.

Lower Jenny Creek Rain Gage

Introduction

Assessment of hydrologic response and water quality parameters, as well as many other aspects of ecosystem function, can only be analyzed accurately in the context of recent precipitation. Although year-to-year trends in precipitation tend to be uniform over an area of this size, there is substantial variability in precipitation between locations based on terrain, elevation, etc. Precipitation data from a number of sites at varying elevations and locations in and around the monument is needed for interpretation of related data including hydrologic, vegetation conditions, etc.

Objectives

Objective 1: Provide rainfall data as context for flow assessment and other types of monitoring.

Objective 2: Provide data to assist in assessment of ACS objectives 4, 5, 6, and 7.

Methods and Materials

Collect rainfall data at 15-minute intervals at one site in lower Jenny Creek using tipping bucket rain gauge. Collect daily precipitation at Howard Prairie Dam (NOAA), Parker Mountain (RAWS), and Buckhorn Springs (RAWS). Collect daily snowfall and snow-on-the-ground at Howard Prairie Dam (NOAA).

Jenny Creek Riparian Restoration Aerial Photo Monitoring

Introduction

Past practices in vegetation management and utilization, stream channelization, and flood control have dramatically changed riparian condition and morphologic character of portions of Jenny Creek. Changes in management, riparian vegetation restoration activities, and removal of flood control structures should allow the stream channel of Jenny Creek to recover from a straightened and constrained state to an increasingly sinuous, non-entrenched condition as described by Rosgen (1996) and others. The extent and size of woody riparian vegetation should likewise increase. Aerial photo monitoring of this change over time is a relatively inexpensive technique that can dramatically demonstrate the magnitude of change occurring.

Objectives

Objective 1: Aerial photo monitoring of change in riparian and morphologic condition in a portion of Jenny Creek undergoing restoration activities.

Objective 2: Provide data to assist in assessment of ACS objectives 1, 2, 3, 5, 7, 8, and 9.

Methods and Materials

Capture digitally-orthoeorreeted GIS layer photo mosaics of Jenny Creek and tributaries in 40S 4E sections 22, 27, and 28 using photos from 1939, 1953, 1962, 1966, 1975, 1980, 1985, 1991, 1996, ~2001, and ~5 year intervals after that.

Jenny Creek Riparian Restoration Stream Temperature Monitoring

Introduction

Changes in riparian vegetative cover, channel dimensions, and bank/floodplain water storage are known to influence stream temperature. Restoration activities and management strategies targeted at meeting ACS objectives should lead to detectable changes in summer stream temperature over the next few decades on this portion of Jenny Creek as the stream channel and adjacent riparian/floodplain areas regain functionality.

Objectives

Objective 1: Document long-term change in water temperatures resulting from passive and active restoration activities attempting to reverse past management impacts.

Objective 2: Provide data to assist in assessment of ACS objectives 2, 4, and 9.

Methods and Materials

Collect seasonal 30-minute interval stream temperature data according to USGS and Oregon DEQ-established methodologies. Collect data at nine monumented sites along 2.5 miles of Jenny Creek, repeated annually. Two sites monitored since 1991, seven additional sites monitored since 1997.

Jenny Creek Riparian Restoration Channel Morphology Monitoring

Introduction

Recovery of riparian vegetation and removal of flood control structures should allow the stream channel to recover from a straightened and constrained state to an increasingly sinuous, non- entrenched condition as described by Rosgen (1996), Leopold (1992) and others.

Objectives

Objective 1: Document long-term change in stream dimension, pattern, and profile resulting from passive and active restoration activities attempting to reverse past management impacts.

Objective 2: Provide context for other aquatic monitoring activities.

Objective 3: Provide data to assist in assessment of ACS objectives 1, 2, 3, 5, 7, and 8.

Methods and Materials

Perform cross-section measurement to calculate entrenchment, width/depth ratio; bankfull channel length to calculate slope and sinuosity. Utilize measurements methodologies including standard cadastral survey techniques and those outlined in Rosgen (1996). Collect data collection at eight cross-sections along 2.5 miles of Jenny Creek, measured at ~ 5-year intervals or after major flood events.

Aquatic Macroinvertebrate Monitoring

Introduction

When monitored over the long term, composition of macroinvertebrate communities can serve as a sensitive indicator of condition and change in aquatic habitat/water quality conditions.

Objectives

Objective 1: Long-term monitoring of aquatic macroinvertebrate community change as indicator of habitat/water quality.

Objective 2: Provide data to assist in assessment of ACS objectives 4, 6, and 9, and compliance with state water quality standards.

Methods and Materials

Monitor taxa abundance, taxa richness, other metrics measured at 12 existing and ten proposed sites using methods which meet or exceed state or EPA protocols for the sampling of benthic macroinvertebrates. Revisit sites at 5-6 year intervals.

Patterns of Fish Habitat Use throughout Jenny Creek/Response to Watershed Change Over Time

Introduction

Habitat relationships of western suckers are poorly understood. Most studies on sucker habitat relationships have been conducted at the microhabitat scale, e.g., the way in which suckers use habitat within a pool (Moyle and Nichols 1973; Alley 1977; Baltz and Moyle 1984; Moyle and Baltz 1985; Decker 1989): This is important information, but without understanding habitat use at more than one spatial scale, serious misinterpretations could lead to inaccurate conclusions about Jenny Creek sucker habitat needs (Dunham and Vineyard 1997). In addition, little is known about the habitat use of suckers at different ages (e.g., young-of-the-year, juvenile, adult). Examining the habitat requirements of different age classes is important in identifying potentially limiting or sensitive physical habitat requirements (Imhof et al. 1996). Finally, the paucity of studies describing habitat relationships of western suckers at different spatial scales is exacerbated by the almost complete lack of studies examining habitat use for longer than one year. This monitoring study continues the work begun by Rossa (1999). It repeats her study of two consecutive sampling seasons to see if the habitat use patterns of the suckers remain the same. In addition, habitat use information of native trout and speckeled dace will also be quantified and compared with Rossa's unpublished data from 1992 and 1993. All of this habitat information will help us understand how the fishes in Jenny Creek are responding to watershed changes, including changes in water management over Howard Prairie and Keene Creek Reservoir dams.

Objectives

Objective 1: To quantify Jenny Creek sucker, Jenny Creek redband trout, and Jenny Creek speckeled dace habitat use within study reaches and throughout the watershed for all age classes.

Objective 2: To further understand how the patterns of habitat use vary between years, and to explore why.

Methods and Materials

Study locations are distributed throughout the entire watershed, to sample a wide variety of reach types. Five monitoring sites are located within the CSNM. A habitat-type based stream survey is used to quantify habitat. Randomly selected habitat units are snorkeled to collect fish numbers and estimated fish lengths.

Analytical Process

Related to Objective 1: Chi-square goodness-of-fit tests. See Rossa (1999) for details.

Related to Objective 2: Multiple stepwise regression and/or discriminant functions analysis. See Rossa (1999) for details.

Keene Creek and Jenny Creek Channel Restoration Monitoring

Introduction

In 1991 and 1992, two large, complicated channel restoration project were constructed as part of the Jenny Creek Work Day (now part of Public Lands Day). Two projects cabled logs to bankside trees to protect eroding banks, allow the return of riparian vegetation, and reduce fine sediment input into stream. The third project embedded logs across an eroding meadow channel to trap sediment and stop downcutting.

Objectives

Objective 1: To evaluate whether original project objectives (bank stability and fish habitat improvement) were met.

Objective 2: To determine how (or if) fish habitat responded to channel changes as a consequence of these projects.

Methods and Materials

Both sites have established photo points documenting bank conditions before and immediately after project completion. Subsequent photos will be taken at these photo points to show changes to the structures over time, and to assess whether they are protecting the stream banks. To assess whether they are providing better fish habitat, two different habitat mapping methods will be used. At the Keene Creek site, a fish habitat-type stream survey (Rossa 1999) will be repeated to document (among other things) changes in pool size and depth, pool-to-riffle ratio, and substrate distribution. At the Jenny Creek site, a channel mapping method will be used, including channnel cross sections and Wolman pebble counts.

Jenny Creek Sucker Spawning

Introduction

Two scientific studies have been completed on Jenny Creek suckers *(Catostomus rimiculus)*: Hohler (1981) and Rossa (1999). While both researchers observed fish in spawning colors, neither pinpointed the exact spawning areas of suckers. Apparently, all closely related sucker species migrate upstream to spawn in the spring (Moyle 1976, Bond and Coombs 1985). Therefore, it is assumed that Jenny Creek suckers also migrate upstream to spawn in tributaries. Until now, it has been assumed that the suckers spawn in Corrall, Beaver and Johnson Creeks (Hohler 1981).

In addition, Rossa (1999) found some indication that certain reaches of Jenny Creek serve as important "nursery areas" for young-of-the-year suckers. Researchers in the Klamath Basin are also finding that larval (baby) suckers prefer certain habitats (John Crandall, The Nature Conservancy, personal communication). A better effort needs to be made to determine the location of the primary nursery areas for suckers. Sucker survival in these nursery areas could be important to population stability.

This information needs to be collected so that the spawning areas can be protected or restored. In the future, sucker spawning should be tracked in different water years to determine if sucker spawning areas are influenced by water flows (e.g., . low water years or high water years) (Barton 1980, White et al. 1990).

Objectives

Objective 1: Quantify Jenny Creek sucker spawning migration timing, and spawning area location.

Objective 2: Quantify Jenny Creek sucker larval dispersment timing, and identify important sucker nursery areas.

Methods and Materials

Larval/Young-of-the-year sampling: Instream drift nets will capture drifting larval suckers. Other related suckers drift downstream at night after hatching (White et al. 1990), and it is likely that Jenny Creek suckers do, too. Dip nets, specially-designed minnow traps and larval fish light traps may also be used to catch newly-hatched fish. All of this sampling gear is small and inconspicuous. Sites will be scattered throughout the Jenny Creek basin and may vary from week to week.

Adult sampling: If possible, adults will be tagged (e.g., with tiny pit tags) in order to track their movements throughout the basin. Pit tags are read with hand-held tag readers (like a grocery store bar code reader), or with small, flat instream panels. Any instream reading stations would be small and inconspicuous.

CSNM Visitor Use Monitoring

Introduction

The goal of this plan is to gather visitor use data, or in the absence of accurate data, make estimates of visitation to the monument. Accurate data can be obtained from the Hyatt Lake Recreation Complex, the only developed recreation facility within the monument. Data will also be gathered from the Pacific Crest Trail and the Pilot Rock areas using traffic or trail counters, but these types of counters require some corrections for number of occupants or animals which might be counted. In areas where no public vehicle access is allowed, estimates will be made based on the best available data.

Businesses within the monument boundary should have some estimates of visitors associated with the monument. These businesses will be asked for use estimates as well. The Oregon Department of Forestry lookout tower on Soda Mountain receives many visitors and these visitor totals will also be useful.

Secondary goals are to attain a count of general area visitors who express interest in the monument and to determine the effectiveness of road closures through monitoring.

Objectives

Objective 1: Continue to collect accurate visitor use data at the Hyatt Lake Recreation Complex. This data is already required for the Recreation Management Information System yearly submission so the mechanism is already in place to gather this data.

Objective 2: Install trail counters along the Pacific Crest Trail. Most of the PCT use within the monument comes from day use on stretches of the trail. Popular segments of the PCT within the monument include Soda Mountain to the Greensprings summit, and Pilot Rock to Soda Mountain. The segment near the Hyatt Lake Recreation Complex also receives a lot of use with hikers going from Hyatt Lake to Howard Prairie Reservoir, or from Hyatt Lake to Little Hyatt Reservoir. Trail counters installed along these segments should provide acceptable use figures. The exact locations will to be determined from field studies, but the objective is to count people who hike these four segments.

Objective 3: A number of people go to the Pilot Rock area to hike to or climb Pilot Rock. A trail counter placed on the path to the base of the rock will provide visitor use data.

Objective 4: The Oregon Department of Forestry lookout tower on Soda Mountain receives many sightseers yearly, and the lookout maintains a log for visitor registration. The lookout will be contacted yearly and asked to supply this visitor data to BLM.

Objective 5: There are a number of roads within the monument, which receive large amounts of vehicle use. Some of the roads will remain open to vehicle traffic, some will be open seasonally, and some will be permanently closed. To determine vehicle usage and to monitor visitation trends, traffic counters will be installed on selected roads. Possible locations include the

Pilot Rock road, the Baldy Creek road, the Pilot Rock jeep road, the Yew Springs road, the Mill Creek road, the Soda Mountain road, the East Chinquapin road, the Emigrant Creek road, the Beaver Creek, and the Parsnip Lakes road.

Objective 6: The area within the monument north of Keene Ridge receives a large portion of its use during big game hunting season. To gather use data, hunter patrols should be conducted during the first two weekends at the beginning of big game rifle season. Major access roads to the monument should be staffed from the afternoon of the Friday before rifle season begins and both weekend days thereafter; then again on the following weekend, at the same times.

Objective 7: Pending the availability of funds, the Soda Mountain WSA will be monitored at least once per month during the time it is accessible to the public. Since all the boundary roads except portions of the Pilot Rock jeep road have been closed, the WSA will be monitored from the air. This monthly over-flight would be an opportunity to gather visitor use data for the monument area south of Keene Ridge.

Objective 8: Interview selected state and federal agencies, and local visitor centers to determine the level of expressed interest in the monument.

Objective 9: Install traffic counters on selected "closed roads to determine the effectiveness of the closures.

The data from all the objectives will then be totaled for a yearly report.

Implementation

Overflights of the WSA will need to be started once the area is accessible to the public, probably April, and continue through November. The WSA will not need to have an overflight every month because the northwest portion of the WSA can be monitored from the Pilot Rock jeep road, but this only allows viewing about a third of the WSA so the remainder must be monitored from the air.

Peregrine Falcon Site Inventory and Monitoring

Introduction

In 1999 the United States Fish and Wildlife Service removed the American peregrine falcon from the Federal List of Endangered and Threatened Wildlife. The BLM is required to monitor known sites for at least five years after the delisting in order to ensure that the species does not suffer undetected declines. There is one known peregrine falcon site in the CSNM. This site is located in an area of high (and probably increasing) human recreational activity. There are also two other cliff sites in the CSNM that may be suitable for peregrines based on their physical attributes. One of these sites is currently occupied by prairie falcons, which strongly suggests that it is suitable for peregrines. Peregrines have been known to displace or replace prairie falcons. The other potential site is not known to be occupied by falcons of either species. The peregrine population appears to be expanding and there is a need to identify any new peregrine sites that may become occupied by that species.

Meeting the following objectives would provide important information on the occupancy and production of peregrine falcon sites in the CSNM. This information would be important for planning activities in the CSNM, as well as for assessing the CSNM's contribution to peregrine falcon populations at a regional scale.

Objectives

Objective 1: Obtain reproductive status and productivity data on every peregrine site in the monument every year.

Objective 1: Detect new peregrine nest sites in their first year of occupancy in order to provide appropriate protection for the site and to plan for future monitoring needs.

Methods and Materials

1. Annually monitor the one known peregrine site for occupancy, reproduction, and productivity using standardized peregrine falcon monitoring protocol techniques. This effort would be extended to any additional peregrine nest sites that are found in the CSNM.
2. Annually check the two potential peregrine sites in the CSNM for occupancy by peregrines. Techniques would be standard peregrine falcon inventory techniques.

Spotted Owl Site Inventory and Monitoring

Introduction

Prior to CSNM designation, most of the northern part of the monument was part of the Jenny Creek Late Successional Reserve (LSR).

In the time period from just before the spotted owl was listed as threatened, to several years after listing, several attempts were made to develop regional conservation plans for the owl and other late-successional associated species prior to the development of the Northwest Forest Plan. Common to all of these plans was a system of reserves along the Cascades. Although different plans had different reserve boundaries, they all showed a reserve in the general area that is now the CSNM. The monument designation essentially made moot the LSR designation in this area. However, the area that is now the CSNM still has a role to play in the conservation of the spotted owl. There are 21 known spotted owl sites in the monument, 17 of which are in what was once LSR. However, not all of the sites in the monument contribute to recruitment into the region's spotted owl population on a regular basis. The BLM has never observed more than 17 pairs of spotted owls in the monument in any one year. In that year (1993) there were no young observed at any sites in the monument. Four of the 21 sites have no documented production of young in any year.

Since the late 1980s, almost all of the adult spotted owls in the Ashland Resource Area have been captured and individually marked with a plastic leg band of a site-specific color and/or pattern. These birds are also marked with numbered USFWS aluminum leg bands. Most of the juvenile owls produced have also been captured and marked with a standard color "juvenile band" and a USFWS band. Many birds were banded prior to 1990, although there was no effort to catch and band every spotted owl at every site. Since 1990, the policy of banding adults and juveniles was in effect until approximately 1995 across the Resource Area and has largely been applied to the monument to date. This has allowed BLM to track movements of individual adult and juvenile owls.

Due to the de-emphasis of monitoring programs for this species since 1995, the BLM currently has no way of reliably tracking the size and demographic trends of the spotted owl population in the monument, or assessing the effects of land management treatments on that population. Without this information there is no way of assessing the contribution that the monument is making to the recovery of the northern spotted owl on a regional scale. Meeting the following objectives would provide important demographic information on the spotted owl population in the monument as well as information on movements of individual owls within, into, and out of the monument.

Objectives

1. Obtain reproductive status and productivity data on every site in the monument every year.
2. Capture and band all adult and juvenile spotted owls.

Methods and Materials

1. Every five years perform a survey of the suitable spotted owl habitat in the monument using established survey techniques as described in the Interagency Spotted Owl Inventory and Monitoring Protocol. This will provide an opportunity to find additional spotted owl sites in the CSNM if and when they become established.
2. Annually monitor the occupancy, reproductive status and productivity of all the known spotted owl sites in the monument, as well as any additional sites turned up by survey efforts described above. Methodology would be that described in the Interagency Spotted Owl Inventory and Monitoring Protocol, as well as standard BLM spotted owl banding procedures.

APPENDIX K

Memorandum of Understanding between the Bureau of Land Management and Friends of the Cascade-Siskiyou National Monument

MEMORANDUM OF UNDERSTANDING

Bureau of Land Management, Medford District
and
Friends of the Cascade-Siskiyou National Monument

This Memorandum of Understanding (MOU) is made and entered into by and between the U.S. Department of the Interior, Medford District, Bureau of Land Management (BLM) and the Friends of the Cascade-Siskiyou National Monument (CSNM). Collectively, the parties to this MOU will be referred to as the Cooperators.

PURPOSE

The purpose of this MOU is to establish a general framework for cooperation between the Medford District BLM and the Friends of the CSNM regarding the management of the CSNM Information Center located at 11470 Highway 66.

BACKGROUND

Designated on June 9, 2000, the Cascade-Siskiyou National Monument consists of 52,947 acres of BLM-administered public lands. There are approximately 32,000 acres of private land interspersed with Monument lands, creating a checkerboard pattern of public and private lands. As a result of this checkerboard, there is not a natural “portal” to the Monument along a specific route, making it difficult to “welcome” visitors to the Monument. Although a majority of first-time visitors to the Cascade-Siskiyou National Monument will enter the Monument along Highway 66, access to public land is not readily apparent. Since June 2001, Friends of the CSNM has been operating an un-staffed Information Center in a small building next to the Greeen Springs Inn on Highway 66. The Information Center helps orient visitors with Monument boundaries and recreational opportunities. The Information Center also provides visitors with educational materials on the area’s remarkable ecology and biodiversity.

OBJECTIVES

The BLM and Friend’s of the CSNM will collaborate to create and maintain displays, exhibits, and other media designed to orient and inform the CSNM visitor.

The Information Center will provide the following types of information:

- Maps
- Brochures
- Planning documents
- Educational displays on the area’s natural and cultural history
- Information regarding the National Landscape Conservation Service and its goals and objectives.
- Hiking/recreational opportunities
- Awareness of private property issues
- Prohibited activities/Road Closures
- Regional information
- Video and other multimedia presentations

The information center will not be used for promotion of special interests or advocacy for specific management alternatives during the planning process.

COOPERATORS SHALL

Bureau of Land Management

1 Continue to provide space for the Information Center within the local community.
2 Develop and install a sign alerting visitors to the Information Center.
3 Designate a BLM staff person as Information Center liaison.
4 BLM liaison to serve on Friend's Information Center committee.
5 Collaborate with Friends to help create and maintain educational and informative exhibits.
6 Provide the media necessary for visitor orientation (maps, brochure, posters, photographs).
7 Provide toilet facilities if deemed necessary.

Friends of the Cascade-Siskiyou National Monument

1 Oversee day-to-day operation of Information Center.
2 Collaborate with BLM to help create and maintain educational and informative exhibits.
3 When possible, organize volunteer staffing of the Information Center.
4 Maintain a visitor's sign-in log to track use.
5 Establish Information Center hours and ensure facility is open to the public during this time.
6 Identify information gaps or needs in the Information Center.
7 Designate Friend's member as a BLM contact person.

IT IS MUTUALLY AGREED AND UNDERSTOOD BY THE PARTIES THAT:

Specific work projects or activities that involve the transfer of funds, services, or property among the cooperators to this MOU will require the execution of separate agreements or contracts, contingent upon the availability of funds as appropriated by Congress, the State Legislature, or as obtained from other funding sources. Each subsequent agreement or arrangement involving the transfer of funds, services, or property will be in accordance with applicable statutes and regulations.

This MOU in no way restricts the cooperators from participating in other legal activities, nor from participating in similar activities or arrangements with other public or private parties.

Nothing in this MOU shall obligate the cooperators to expend appropriations, provide material, services, or labor, or to enter into any contract or other obligation.

This agreement may be revised as necessary by the issuance of a written amendment, signed and dated by all cooperators.

Any party may terminate this agreement by providing a 60-day written notice. Unless terminated under the terms of this paragraph, this MOU will remain in full force and effect until March 15, 2006 and may be renewed by agreement of all parties.

Entered into this 15th day of March, 2004.

SIGNERS:

____

Cascade-Siskiyou National Monument Manager, Bureau of Land Management

____

Chairperson, Friends of the Cascade-Siskiyou National Monument

APPENDIX L

Scotch Creek Research Natural Area

Management Plan
for
Scotch Creek Research Natural Area

Ashland Resource Area
Medford District
Bureau of Land Management
United States Department of the Interior

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INTRODUCTION

Research Natural Areas (RNAs) are part of a federal system of land tracts identified and designated to preserve and protect certain natural features for research and educational purposes. The overall goals for establishing RNAs are to provide:

1. baseline areas against which the effects of human activities can be measured;
2. sites for study of natural processes in an undisturbed ecosystem; and
3. a gene pool for all types of organisms, especially rare and endangered species.

The interagency Pacific Northwest Research Natural Area Committee, composed of federal, state and private organizations in Oregon and Washington, has identified a set of natural elements, or "cells", representing terrestrial and aquatic habitats, plant communities, and ecosystem processes targeted for protection through the RNA system.

The 1,800 acre Scotch Creek RNA (SCRNA) is located in extreme southern Oregon in Jackson County, along the border with California in Scotch Creek.

The area was originally nominated by the Nature Conservancy in 1991, analyzed and evaluated by the Medford District RMP process in 1992 by the Ashland Resource Area, BLM, proposed as a new RNA in the Medford District Proposed Resource Management Plan/Environmental Impact Statement (USDI 1994), and designated a new RNA under the Record of Decision and Resource Management Plan (USDI 1995a). One of the management actions required by the ROD for Special Areas, including RNAs, is development of site-specific management plans. Research Natural Area Management Policy (USDI 1986) requires development of a management plan that establishes operational objectives to maintain or enhance the unique values of the designated RNA. In addition to operational objectives, a monitoring strategy should be developed to evaluate progress made toward meeting resource management objectives. These requirements establish the basis for preparation of this management plan.

POLICY

This management plan follows the guidelines established by the Pacific Northwest Interagency Natural Area Committee (PNW 1991), the Medford District Bureau of Land Management (BLM) Management Plan and Record of Decision (USDI 1995a) and BLM Manual Supplement, 1623 Supplemental; Program Guidance for Land Resources (USDI 1987).

Management objectives for RNAs and Areas of Critical Environmental Concern (ACECs), addressed in both plans under the category Special Areas, include the following directives:

- Preserve, protect, or restore native species composition and ecological processes of biological communities (including Oregon Natural Heritage Plan terrestrial or aquatic cells) in research natural areas. These areas will be available for short- or long-term scientific study, research, and education and will serve as a baseline against which human impacts on natural systems can be measured.
- Ideally, RNAs should be undisturbed by human impacts; however, because pristine examples of significant ecosystems may not exist, the least altered sites should be selected. They should be sufficiently large to protect key features from significant impacts judged inappropriate for the area and natural processes should be allowed to dominate. In situations where human activities have interfered with natural processes, deliberate manipulations which simulate natural processes are allowed (USDI 1986)
- Research Natural Area Management Policy (USDI 1986) requires development of a management plan establishing operational objectives to maintain or enhance the unique values of the RNA for each designated area. In addition to operational objectives, a monitoring strategy should be developed

to evaluate progress made toward meeting resource management objectives. These requirements establish the basis for preparation of this draft management plan.

BASIS FOR DEDICATION AND SETTING OBJECTIVES

RNA History

The Nature Conservancy, under contract with the BLM State Office, nominated lower Scotch Creek as an RNA in February 1991 because it filled Cell 53, a typical eastern Siskiyou chaparral community, as designated in the 1988 Oregon Natural Heritage Plan (ONHAC 1998). This area was originally nominated as the Slide Creek Ridge RNA and the name was changed when designated. The Oregon Natural Heritage Advisory Council (1998) now refers to Cell 56 as a Birch-leaf mountain mahogany-ceanothus-rosaceous mixed chaparral community. The NHA Council considers that the cell is adequately represented by the Scotch Creek RNA.

The area was analyzed and evaluated by the RMP process in 1992 by the Ashland Resource Area, BLM, was proposed as a new RNA in the Medford District Proposed Resource Management Plan/ Environmental Impact Statement (USDI 1994), and designated as new RNA under the Record of Decision and Resource Management Plan (USDI 1995a). One of the management actions required by the ROD for Special Areas, including RNAs, is development of site-specific management plans. Scotch Creek RNA has been under interim management requirements since January 5, 1989. The RNA is now a part of the Cascade-Siskiyou National Monument.

Basis for Dedication

The lower half of Scotch Creek drainage to the California border was nominated as an RNA because it satisfied cells for two Eastern Siskiyou chaparral types: a Rosaceous type dominated by *Quercus garryana* (not mentioned in the original nomination, *Prunus subcordata, P. virginiana, P. emarginata,* and *Cercocarpus betuloides* and a different chaparral community dominated by *Ceanothus cuneatus*, *Arctostaphylos* species and *Cerocarpus betuloides*. Access was also a consideration in the selection of this particular area.

Management Restrictions

The presidential proclamation (Appendix A) withdraws lands within the monument from mineral location, entry, and patent and mineral and geothermal leasing; prohibits commercial harvest of timber or other vegetative material; prohibits unauthorized OHV use; but permits continued for grazing until completion of a study of grazing impacts on natural ecosystem dynamics.

Setting Objectives

The Scotch Creek RNA was established for scientific research and as a baseline study area for chaparral vegetation represented in the area.

NATURAL AREA DESCRIPTION

Scotch Creek Area Description

Location

The RNA is a 1,800 acre (728.5 ha) parcel located in southeastern Jackson County (T.41S.,R.3E., Secs.5 SW¼;06S½;07NE¼;08;09SW¼) along Scotch Creek, a tributary of the Klamath River that flows into Iron Gate Reservoir through the Horseshoe Ranch Wildlife Area (California Department of Fish and Game and Redding Resource Area, BLM). Scotch Creek flows to the southeast from the ridge that separates the Klamath and Rogue River below Porcupine Mountain to the north. The area is bounded on the north by the closed Schoheim Road BLM Road 41-2E-10.1, on the west by Slide Creek Ridge, on the east by Lone Pine Ridge, and the Oregon-California border on the south. The Schoheim Road forms a common boundary between the Scotch Creek RNA and the Soda Mountain Wilderness Study Area to the northeast. The small parcel of privately owned land is isolated at the southeast corner of the RNA (T.41S.,R.3E., Sec.16) was recently given to the U.S. Department of the Interior by the Soda Mountain Wilderness Council. This will be incorporated into the Scotch Creek RNA.

Access

In the past, the Schoheim Road 41-2E-10.1 has provided relatively easy vehicle access to Scotch Creek RNA. However, the monument proclamation closed the Schoheim Road to all mechanized travel except for authorized administrative access for emergency or management purposes. Authorized off-highway vehicle (OHV) use is allowed, weather and road conditions permitting. Public access to the RNA by foot or horseback is not restricted.

Scotch Creek RNA is most easily accessed from U.S. 99 via BLM Pilot Rock Road 40-2E-33 to the headwaters of Scotch Creek via Porcupine Gap, then south on the closed Scotch Creek connector road (foot travel only) along Scotch Creek to the north RNA boundary at the Schoheim Road or from the south through the California Department of Fish and Game's Horseshoe Ranch Wildlife Area via the Copco-Irongate Road in Siskiyou County, California. The road north from Iron Gate Reservoir has a locked gate (California Department of Fish and Game, Shasta Valley Wildlife Area Headquarters, Montague, CA) at the south end of the canyon. The road is passable as far as the stone spring house, except during periods of high water when the ford below the spring house is impassable. The SCRNA southern boundary at the Oregon-California border is reached by a two-mile walk on an old road along Scotch Creek. Except for the Horseshoe Ranch Wildlife Area access, other routes to the RNA are unavailable much of the year because of snow. Other authorized administrative access or public access (on foot or horseback) is available from the east via the closed BLM Schoheim Road 41-2E-10.1 from the east via Skookum Creek (from Oregon Route 66 to BLM Soda Mountain Road 39-3E-32.2 to 39-3E-28.0 to 39-3E-27.2 to Schoheim Road, Randcore Pass (from Oregon Route 66 to BLM Mill Creek Road 40-3E-12.0 to 12.1 to 19.2 to Schoheim Road, or the Jenny Creek crossing from the Copco Road (private) and BLM Road 40-4E-3.1 to the Schoheim Road. From the west the RNA can be reached from U.S. 99 via the BLM Pilot Rock Road 40-2E-33 to 41-2E-3.0 to the Schoheim Road. The upper northeast part of the RNA can also be reached from Baldy Creek Rd. 40-3E-5 and 40-3E-30, down Lone Pine Ridge Rd to the Schoheim Rd.

Ecoregions

The Scotch Creek RNA is located in the Klamath River Ridges Ecoregion (78g of Klamath Mountains, Level III Ecoregion (Pater and others 1997a and 1997b)(Map 3). Ecoregions are defined by a number of factors that include: physiography (including elevation and local relief); geology (surficial material and bedrock); soil (order, common soil series, temperature and moisture regimes); climate (mean annual precipitation, mean annual frost-free days, mean January and July min/max temperature); potential natural vegetation, land use (recreation, forestry, watershed); and land cover (vegetation present). The following synopsis of the Klamath River Ridges Ecoregion is based on Pater (1997a and 1997b).

78g Klamath River Ridges (3,800 - 7,000 feet)

The Klamath River Ridges Ecoregion has a dry continental climate and receives, on average, 25 to 35 inches of annual precipitation. Low elevation and south-facing slopes have more drought resistant vegetation than elsewhere in the Klamath Ecoregion (78), such as juniper, chaparral, and ponderosa pine. Higher and north-facing ridges are covered by Douglas-fir (Pseudotsuga menziesii) and white fir (Abies concolor). Ecoregion 78g has less precipitation, more sunny days, and a greater number of cold, clear nights than the Inland Siskiyou Ecoregion (78e) to the west.

Climate

Scotch Creek RNA lies within the influence of the continental climate of the Great Basin and the more moderate wetter oceanic influences to the west. Local climate is further influenced by mountain topography and elevation and tends to be more like that of the Shasta Valley to the south than the Rogue Valley to the north. Winter storms generally come from the ocean. Periodic floods of some magnitude occur when warm wet storms melt existing snow pack. Summers are usually long and dry, with occasional thunderstorms with lightning and with or without precipitation. These summer events are usually more frequent than in the Rogue Valley due to the influence moisture laden air drawn up from the southwest along the eastside of the Sierra Nevada and Cascade Mountains.

Average annual precipitation varying from a low of 24 inches at the southeast corner of the RNA to a high of 34 inches at the northwest boundary. Average annual precipitation at Copco Dam (elevation 2,700 ft.) on the Klamath River to the southeast in California is 19.8 inches (WorldClimate 2000). There is also a National Oceanic and Atmospheric Administration (NOAA) weather station at Howard Prairie Dam (elevation 4,568 ft.) located approximately 13 miles northeast of the RNA in the Jenny Creek Watershed. Average annual precipitation is 32.8 inches at the Howard Prairie Dam station. Precipitation during the winter months occurs as rain or snow.

The Howard Prairie Dam NOAA station is the closest weather station with air temperatures (Table L-1).

Table L-1. Average Air Temperatures at Howard Prairie Dam
NOAA Station (1961-1990)

	Air Temperature (°F)												
	Jan	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**Year**
Max	37.5	42.4	45.9	52.2	61.0	70.2	78.6	78.4	71.6	60.7	43.7	36.5	56.5
Min	18.9	21.1	23.8	27.5	33.1	40.0	43.6	43.2	37.7	32.3	26.7	21.1	30.7
Mean	28.2	31.8	34.8	39.8	47.1	55.1	61.1	60.8	54.7	46.5	35.2	28.8	43.6

Source: Oregon Climate Service 2000

Topography

Scotch Creek is in a northwest/south east trending steep sided valley that extends from Pilot Rock and Porcupine Mountain on the Rogue/Klamath Divide to the Klamath River where it empties in Iron Gate Reservoir. The watershed is bounded on the west by Slide Creek/Hutton Creek Ridge and the east by Lone Pine Ridge. There is one major tributary that joins the main stem of Scotch Creek at the end of a narrow ridge just above the waterfall in the SE 1/4 NE 1/4 of Section 7. The 30 ft. waterfall on the main stem of Scotch Creek is a special topographic feature that prevents the upstream migration of fish. Slide Creek, a major tributary that enters Scotch Creek in the Horseshoe Ranch Wildlife Area in California, is not included in the RNA. The elevation of Scotch Creek in the RNA varies from 3,960 ft. where Scotch Creek crosses the Schoheim Road to 3,080 ft. at the lower boundary of the RNA at the California border. Highest elevations in the drainage are 5,908 ft. at Pilot Rock, 5,200 ft. at Porcupine Mountain, 5,403 ft. on upper Lone Pine Ridge. Lone Pine Ridge is 3,640 ft. at the California border, Slide Ridge, 4,000 ft.

The Scotch Creek RNA comprises about 25 percent of the Scotch Creek Subwatershed (see Hydrology section). The RNA is bounded on the north and east by the Schoheim Road, on the south by the Oregon/California border, and on the west by the small ridge between Scotch and Slide Creeks. In the center of the RNA, Scotch Creek splits into two forks, the east and west. Approximately ½ mile downstream from the forks is a 30 ft. bedrock waterfall, which prevents upstream migration of fish (Parker 1999). West-facing slopes are characterized by open grasslands with oaks in the draws; densely vegetated east-facing slopes are dominated by small oaks and brush.

Geology

Scotch Creek RNA is mapped as Western Cascade Oligocene basalt, basaltic andesite, and andesite (Tb2) (Smith, et al. 1982). These flows are interbedded with volcanic breccias and pyroclastic deposits and other rock types too thin, discontinuous, or poorly exposed to map separately. Different rock types in these formations are not mapped because of the scale of the map and the complexity of the formations. Pilot Rock, at the head of the Scotch Creek Subwatershed, and Cathedral Cliffs just to the east of Lone Pine Ridge on Camp Creek are mapped as mafic intrusive rocks (Tm) and are outside the present RNA boundaries (Smith et al. 1982).

Soils

Soil information for Scotch Creek RNA is based on the Soil Survey of Jackson County Area, Oregon (USDA 1993). There are six mapped general soil units in the RNA. Because of the small scale of the map and the large area covered, mapped units are often presented as complexes of different soil types. Number of acres, percent of RNA, productivity class and site index (if any) of the soil types found in the RNA are summarized in Table L-2. About 79 percent of the RNA consists of clay or rock outcrop soil complexes. The balance (21%) are soil types capable of supporting mixed conifer stands.

Table L-2. Scotch Creek RNA Soil Units

Soil #	Unit Name	Percent Slope	Acres	Percent Acres	Productivity Class[2]	Site Index[1]
14G	Bogus very gravelly loam, north slopes	35 to 65	323.2	18.1	PSME[3] 70 PIPO 90	6 6
81G	Heppsie clay, north slopes	35 to 70	151.9	8.5	-	-
82G	Heppsie-McMullin complex	35 to 70	403.5	22.5	-	-
113G	McMullin-Rock outcrop complex	35 to 60	865.6	48.4	-	-
114G	McNull gravelly loam, north slopes	35 to 60	15.2	0.8	PSME 80	7
116E	McNull-McMullin gravelly loam	12 to 35	15.2	0.5	PSME 70	6

(USDA,1993)

[1] Site Index (SI). Height and age of selected trees in stands of a given species. A designation of the quality of a forest site based on the height of the dominant stand at an arbitrarily chosen age. Average height at 50 yrs = 75 feet. SI is 75. Age varies with species and soil type: 100 yrs. PSME on Pokegama and Woodcock units, PIPO all units; 50 yrs. PSME on all other units, ABMASH, and ABCO.

[2] Productivity Class. Yield in cubic meters per hectare per year calculated at the age of culmination of mean annual increment for fully stocked natural stands.

[3] PSME = *Pseudotsuga menziesii*, Douglas-fir; PIPO = *Pinus ponderosa*, ponderosa pine; ABCO = *Abies concolor*, white fir.

Hydrology

Scotch Creek Subwatershed comprises 11,503 acres (18 sq. mi.); 62.5 percent of the ownership is BLM, 30.3 percent is the State of California, and 7.2 percent is privately owned. There are 109.5 total stream miles with a stream density of 6.1 miles per square mile. Scotch Creek Subwatershed contains 4.7 miles of fish-bearing streams and, based on aerial photo estimates, 5.5 miles of perennial non-fish bearing streams and 60 miles of intermittent streams, for a total of 70.2 miles of stream with riparian reserves (USDI 2000). Scotch Creek enters the Klamath River system as a fifth order stream at Iron Gate Reservoir. There are no mapped springs on the USGS 7.5 Quad maps for the RNA. There are no water developments within the RNA; however, there is a 0.033 acre-foot reservoir used for livestock watering on an unnamed tributary to Scotch Creek above the RNA.

The stream gradient of Scotch Creek is low to moderate from Iron Gate Reservoir to the Oregon border, but steepens beyond that point. The channel meanders through a narrow valley near the confluence with Slide Creek, where it is then confined in a narrow V-shaped valley with steep hill slopes to its headwaters (USDI 2000). Substrate material in Scotch Creek is cobble and boulders over bedrock with some gravel and fines. Riffles and cascades dominate the average stream profile. Three stream channel morphology types were identified for the Scotch Creek Subwatershed using the Rosgen classification system (Rosgen

1996): Aa+ (74 miles), A (10 miles), and B (25 miles). The main stem of Scotch Creek, the lower reaches of Slide Creek, and the main unnamed tributary above the waterfall are classified as B type channels. B stream types are moderately entrenched, having a moderate gradient, riffle dominated channel with infrequently spaced pools. These channel types have a very stable plan and profile with stable banks. The A channel types are steep, entrenched, cascading, step/pool streams. They are high-energy streams located in the headwaters of Scotch Creek. The Aa+ channel types are very steep (greater than 10 percent slope) and deeply entrenched.

There is little data available on water quality or quantity in Scotch Creek, except for a few water quality measurements taken on July 29, 1975 by a BLM fish survey crew and those that Parker obtained during his aquatic surveys on June 30 and July 1, 1999 (Parker 1999). These data indicate that, throughout the RNA, Scotch Creek was quite cool: 50-52°F above the falls, and 56°F below (USDI 1999). At one spring in the upper watershed, water temperatures were a healthy 48-49°F (Parker 1999). At the time of the survey, Scotch Creek was intermittent above the junction of the two forks with a permanent flow below.

The 1975 measurements, taken 50 yards upstream from the mouth of Scotch Creek, were air temperature 68°F; water temperature 66°F; dissolved oxygen 8.5 ppm; pH 9.0; CO_2 60 ppm; free acidity 0 for both high and low range; and total hardness 205.2 ppm. Parker (1999) found that water temperatures varied from 9-9.5°C (48.2-49.1°F) at cold water inputs to 14.5-16.5°C (58.1-61.7°F) at the reservoir and in open meadows near the upper reaches of the stream. Temperatures ranged from 10.0-11.5°C (50-52.7°F) throughout the rest of the stream. Parker also noted that at the time of his survey, Scotch Creek was intermittent above the junction of Scotch Creek and the major tributary and perennial below.

Water quality in the RNA has probably been affected by road building and past logging in the upper portion of the Scotch Creek Subwatershed. The decommissioned Porcupine Gap/Schoheim Road connector is within the riparian zone adjacent to the upper reach of Scotch Creek. The natural surfaced Schoheim Road with its culvert crossings on the main stem of Scotch Creek and many tributaries had a detrimental affect on the sediment regime in the Scotch Creek system. In the fall of 1998, the BLM improved drainage structures and seasonally blocked the section of the Schoheim Road within the Scotch Creek Subwatershed. This road work reduced the amount of sediment moving into the Scotch Creek system.

Vegetation

Scotch Creek RNA was established on the basis of a large area of chaparral dominated by members of the Rosaceae (*Prunus* species, *Amelanchier, Cercocarpus, Holodiscus*) primarily located on the east-facing slopes of Slide Ridge. The grassy, west-facing slopes of Lone Pine Ridge contained stands of perennial native grass which were dominant grassland species in former times. Little was known of the nature of the plant communities and their plant species.

Brock and Callagan (1999a) conducted a general inventory of plant community types in April-August 1999 that greatly increased our knowledge of Scotch Creek RNA plant communities. A list of plant species is provided in Appendix E of the CSNM draft plan. They point out several interesting floristic features of the RNA. Poison oak occurs at a single location, in a steep rock outcrop formation in the far northeast corner of the RNA. Poison oak is common at similar elevations both north and south of the RNA. Madrone is also absent, although it is common in the Rogue River watershed to the north. The grasslands contain native perennial grasses with low cover. Small areas of nearly pure Idaho fescue and bluebunch wheatgrass were found. Other grasslands best described as "mixed annual-perennial dominance" have 10-15 percent cover of native species, a high percentage of cover by introduced grasses species, and weeds. They also describe an important broadleaf maple-black oak forest riparian community associated with the perennial Scotch Creek stream system.

In their study they distinguished 11 different community types of varying degrees of cohesiveness for five different types: Riparian, Oregon white oak woodland, Grassland, Chaparral, and Conifer. Map 14 shows the distribution of the community types in the RNA. The following description is taken with some modification from Brock and Callagan (1999a).

Riparian Types

Two riparian communities are present: one dominated by trees; another by shrubs.

California Black Oak-Bigleaf Maple Riparian Woodland

This distinctive riparian woodland type occupies a wide zone in the alluvial bottoms of Scotch Creek and a more narrow zone in the lower reaches of several of the smaller side streams. On Scotch Creek these woodlands extend upslope on cool aspects for 100-200 ft. above the creek bottoms. The alluvial soils sometimes form wide low terraces. Elevations range from 3,000 - 4,400 ft. This riparian zone forms a major wildlife corridor through the RNA.

Bigleaf maple (average 38% cover), black oak (18%) and Oregon white oak (16%) dominates the tree layer with occasional Douglas-fir, ponderosa pine and rarely black cottonwood or white alder. The shrub layer is usually dense with mock orange, tall Oregon grape, tall snowberry and serviceberry. The herb/grass layer varies, typically dominated by *Claytonia spp., Galium aparine, Tonella tenella, Vicia americana* and, in drier spots, *Bromus sterilis*. Two special Status species are associated with this type, *Ribes inerme ssp. klamathense* and *Isopyrum stipitatum.*

Riparian Shrub Community

On the middle and upper portions of the many tributaries that dissect the west slopes of Lone Pine Ridge (and the entire reaches of the southern-most tributaries that traverse the rocky "Lower Slope Complex") is a distinctive shrub-dominated community which typically occupies a very narrow band (50 ft. wide) with dry grasslands or rock outcrop beyond its margins. In addition, these riparian zones typically have open exposed stretches between shrub patches. Most of these streams are perennial. A very high level of butterfly activity was observed at these sites (Brock and Callagan 1999a)

Oregon white oak and western juniper are usually present with low percent cover. Mock orange (average 40% cover) dominates the shrub layer with willow, tall Oregon grape, and chokecherry common. *Rosa californica* is occasional. The herb layer is dominated by *Mimulus guttatus* and *Trifolium variegatum* (in the aquatic zone) with *Bromus sterilis* and *Poa bulbosa* (on the drier margins). Howell's false-caraway (*Perideridia howellii*) is common.

Oregon White Oak Woodland Type

Brock and Callagan (1999a) describe a single oak woodland type: *Oregon white oak /Tall Oregon Grape Woodland.* While Oregon white oak (also known as white oak) is a common co-dominant species in virtually all of the forest and chaparral plant communities in the RNA, it forms nearly pure stands in much of the area; these areas are mapped as Oregon white oak woodland. This type is found in several situations: it forms the outer margin of the riparian woodlands, extending upslope when soil depth allows; it extends up sidestream canyons in wide bands; it forms patches in open grassland communities (apparent clonal patches); and it is a component of the large chaparral-complexes which cover the upper slopes of Lone Pine Ridge and the east slopes of Slide Ridge. It occurs on Bogus (very gravelly loam) and Heppsic (clay) soils.

Oregon white oak cover is nearly always very dense (average 85%). Western juniper is often present at low cover. California black oak is present in draws or moist areas. The shrub layer is dominated by tall Oregon grape and tall snowberry with covers of each averaging 10-12 percent. Klamath plum and chokecherry are often present. The herb layer is variable depending on the density of the shrub layer;

where shrubs are dense, the herb layer is sparse. The herb layer cover varies from under 10 percent to over 50 percent. Typical species include *Claytonia, Nemophila parviflora, Viola sheltonii, Bromus sterilis, Yabea microcarpa, Lithophragma parviflora* and *Marah oregana. Isopyrum stipitatum*, a rare species, is fairly frequent. This Oregon white oak woodland is not adequately described in current plant association guides for southwest Oregon.

In much of this community the oaks are dense and stunted, averaging 15-20 ft. in height. Stems in many of these stands are 60-70 years old with diameters of only 4-6 inches. Occasional large trees are encountered but small diameter trees are the rule. Apparently, these stands developed under a frequent fire regime. It is possible that many of the patches are clonal and of very great (undeterminable) age. Many of the more stunted trees bear a resemblance to *Quercus garryana* var. *breweri* but the length of the leaves consistently indicates that these are var. *garryana*.

Rock Outcrops

Rock outcrops are sparsely vegetated with the most frequent species being *Juniperus occidentalis, Prunus subcordata, Bromus tectorum* (cheatgrass), *Pseudoroegneria spicata, Alyssum alyssioides, Penstemon deustus* and *Lomatium californicum*. At higher elevations, *Sedum obtusatum* is common. A large population of *Woodsia oregana* also occurs at the higher elevations. A large sprawling member of the Hydrophyllaceae, *Phacelia ramosissima* var. *eremophila*, an interesting eastern Oregon species that is uncommon here, was found in protected (shady) areas of rock outcrops. The distinctive Scotch Creek RNA rock outcrop plant community is frequently associated with grassland complexes and with outcrops in tree and shrub dominated communities.

Grassland Types

Brock and Callagan (1999a) recognize grassland complexes based on elevation and their association with rock outcrops or Oregon white oak Woodlands.

Low Elevation Grassland-Rock Outcrop Complex

Lower elevations have a well-defined zone which is significantly more shallow and rocky than higher elevations. The zone's upper limit is at approximately 3,350 ft. elevation, the same elevation as the major waterfall on Scotch Creek and the series of rock outcrops west of Scotch Creek. This may represent a geological break between old and "new" volcanic flows. Soils are all classified as McMullin-Rock Outcrop Complex (the proportion of rock outcrop is quite high). The elevation ranges from 3,000-3,350 ft. The grassland here forms a mosaic with rock outcrop communities, Oregon white oak woodland, and wedgeleaf ceanothus-Klamath Plum chaparral in approximately the following proportions:

20% – Rock outcrop
60% – Dry grassland
15% – Oregon white oak woodland
5% – Oregon white oak/ Klamath plum-wedgeleaf ceanothus chaparral

The grassland component in this area is dominated by annuals with a regular low cover of bluebunch wheatgrass. It differs significantly from the mid to upper slope grasslands in several respects including:

- dominance by the exotic grasses *Bromus tectorum* and *B. japonicus*
- *Bromus hordeaceus* much less abundant
- high frequency of *Prunus subcordata*
- high frequency of *Lomatium californicum*
- higher frequency and cover of *Lupinus albifrons*

- very low frequency and cover of medusahead (*Taeniatherum caput-medusae*)
- low frequency of starthistle (*Centaurea solstitalis*)
- relatively higher frequency and cover of *Agoseris heterophylla*, *Lomatium macrocarpum* and *Trifolium ciliolatum*.

The area is on a southeast aspect with significant due south and due west aspects represented. On the east slopes of Slide Ridge are several small rock outcrop openings which should be classified as this type though several of these support dense stands of Idaho fescue which is sparse east of the creek where heavy grazing has been continuous for 150 years. Significant surface erosion has occurred due to grazing but no rills or gullies are obvious. The surface layer is very gravelly with 30-50 percent exposed gravels and soil.

Middle and Higher Elevation Grassland-Oregon White Oak Woodland Complex

Soils are significantly deeper and slopes tend to be more moderate with occasional “bench” topography above approximately 3,350 ft. elevation. The grasslands here tend to have denser cover than the lower grasslands. Most of the area is still dominated by exotic annual grasses and forbs. Idaho fescue or bluebunch wheatgrass dominates the occasional patch of grass. However, patches of starthistle, which is rapidly moving in from the south and east, are more frequent.

All soils are McMullin-Rock Outcrop Complex, although the proportion of rock outcrop is much lower than in the Lower Grassland Complex. Elevation ranges from 3,350 to 4,200 ft. The plant community is on a southwest aspect with significant due south and due west aspect represented. Significant surface erosion has occurred due to grazing, but no rills or gullies are obvious. The surface layer is gravelly with 20-30 percent exposed gravels and soil. A mosaic of grassland is formed here, with Oregon white oak woodland and a small amount of wedgeleaf ceanothus- Klamath plum chaparral in approximately the following proportions:

5% – Rock outcrop
65% – Dry grassland
18% – Oregon white oak woodland
2% – Oregon white oak/ Klamath plum-wedgeleaf ceanothus chaparral

Astragalus californicus, a species previously considered “possibly extinct in Oregon,” was found in this grassland community. It is often associated with fairly dense patches of bluebunch wheatgrass. This is the only known Oregon location for this species.

This community is at serious risk of further invasion by starthistle. Many incipient populations are present in the northwest half of the area. The southeast half is already infested by large starthistle populations. The soils have the right combination of adequate depth and periodic exposure (through erosive mechanisms) to allow for the continued spread of starthistle. This should be considered the biggest threat to the integrity of the community.

Chaparral Types

Brock and Callagan (1999a) discovered that the eastern Siskiyou rosaceous chaparral for which the RNA was established consists of three relatively distinct plant communities:

Oregon White Oak/Klamath Plum-Wedgeleaf Ceanothus

This community is a minor component of the RNA, occurring on the lower and middle slopes of the west aspects of Lone Pine Ridge and extending south across the Oregon/California border. It is a typical dry-site chaparral but appears to be fairly localized in occurrence. It differs significantly from similar communities in the Applegate Valley because poison oak is absent here. This community may extend up the Klamath River Canyon to the east.

Oregon white oak is always present, usually in shrub form, at a cover that can vary widely, depending on soil depth. Wedgeleaf ceanothus and Klamath plum are both usually present with covers averaging 23 percent and 57 percent, respectively. Klamath plum is clearly the more abundant species on most sites. Birchleaf mountain mahogany is common at the higher elevations with covers of up to 5 percent. Annual grasses (*Bromus japonicus, B. tectorum* and *B. mollis*) dominate the grass/forb layer with frequent *Lomatium californicum*, *Claytonia perfoliata* and *Dichelostemma capitata.*

The soils supporting this type are classified as McMullin-Rock Outcrop complex. Elevation ranges from 3,000 to 4,000 ft. The aspect is south to southwest. Slope position is lower to mid-slope. This community typically has very gravelly surface soils.

Oregon White Oak/Mountain Mahogany-Klamath Plum Chaparral Complex (Lone Pine Ridge)

The upper slopes of the west face of Lone Pine Ridge are covered with a dense chaparral consisting of a mix of Oregon white oak, birchleaf mountain mahogany, with a regular presence (but low cover) of Klamath plum. Some areas are dominated by Oregon white oak with reduced levels of mountain mahogany; other areas are dominated by mountain mahogany with Oregon white oak cover reduced; much of the area is a more or less equal mix of these two. Where mountain mahogany is the dominant (and Oregon white oak cover low), canopy gaps are frequent and the herb layer is significantly denser as well as more diverse with several dry-site (grassland) species occurring in the canopy gaps. Most of the area is very dense and extremely difficult to walk through.

Throughout the area, the dominant herb-layer species are *Claytonia* (both *perfoliata* and *parviflora*), *Galium aparine,* and *Nemophila parviflora*. These species are the same as are found to be dominant in the Oregon white oak Woodland type and in the chaparral on Slide Ridge. However, three other species were found in high frequency in this complex: *Hydrophyllum occidentale* (average 2% cover), *Osmorhia chilensis* (1%) and *Clarkia rhomboidea* (average 2% cover). These elements are significantly different than the Slide Ridge chaparral complex.
The complex consists of roughly the following proportions:

40% – "Mixed Type" with Oregon white oak averaging 60 percent cover and mountain mahogany averaging 50 percent cover with 3 percent chokecherry, 3 percent Klamath plum, and 4 percent tall snowberry. This type closely resembles some of the drier, mountain mahogany dominant chaparral) found on Slide Ridge.
30% – "Dry Type" with mountain mahogany averaging 65 percent and Oregon white oak averaging 5 percent. Klamath plum is usually present a 1 to 2 percent cover. Chokecherry and snowberry are usually absent. This type has frequent small open spots with dry-site species such as Collomia granidflora, Bromus sterilis, Lomatium californicum and Eriophyllum lanatum.
10% – Oregon white oak Woodland: see separate description for the type; it occurs here fairly randomly, often in the form of a large (apparent) clone in the middle of one of the other types.
10% – Grassy openings with typical mid-slope annual-grassland species; starthistle was not seen in this part of the RNA.
10% – Rock outcrops.

There does not seem to be any apparent aspect affinities in this complex except that the "Dry" Type (mountain mahogany dominant) seems to prefer the more southerly aspects. For the most part, the types are apparently randomly mixed.

The soils supporting this type are mapped as Heppsie-McMullin complex. The elevations range between 4,200 and 5,100 ft. The aspect is mainly southwest with some due west and some due south.

Oregon White Oak/Mountain Mahogany-Snowberry Chaparral Complex (Slide Ridge)

On the entire east slope of Slide Ridge (west of Scotch Creek) is a complex similarly dominated by Oregon white oak and mountain mahogany but it is more moist than the Lone Pine Ridge complex. There is considerable variation in species composition across the slope and some patterns are discernable. However, there are no clear delineations, and all of the "types" more or less intergrade. The vegetation is fairly uniformly short-statured (10-20 ft. in height) and moderately dense. It can be traversed on foot with reasonable ease, though fairly slowly. The tree/shrub layer cover is consistently high, averaging 90 percent. Oregon white oak is always present with an average cover of 54 percent. Mountain mahogany is usually present with an average cover of 30 percent. Snowberry is usually present with an average cover of 18 percent. Serviceberry, tall Oregon grape, Klamath plum and chokecherry all occur with high frequency and average 2-9 percent cover. Mock orange (*Philadelphus)* and Indian plum *(Oemleria)* occur occasionally. *Claytonia* (*perfoliata* and *parviflora*) and *Galium aparine* dominate the herb layer with *Smilacina racemosa* usually present. Other high frequency species include *Nemophila parviflora, Viola sheltonii* and *Clarkia rhomboidea*. This complex differs from the Lone Pine Ridge chaparral complex in the consistent high cover of snowberry (average 18%), the consistent presence of *Smilacina racemosa* and *Viola sheltonii*, and the significantly lower cover of *Hydrophyllum*, *Clarkia rhomboidea* and *Osmorhiza chilensis*. It also lacks the dry grassland species that are fairly frequent in the Lone Pine Ridge chaparral.

While it is difficult to distinguish distinct types in this complex, there are some patterns that can be described. The complex is roughly composed of the following mix of community types:

40% – Oregon white oak-mountain mahogany; Oregon white oak dominant: This type averages 60-70 percent Oregon white oak and 20 percent mountain mahogany with 20 percent snowberry; it is fairly moist and occurs on northeast, east, southeast aspects.

20% – Oregon white oak-mountain mahogany; mountain mahogany dominant: This type averages 30-35 percent Oregon white oak and 60 percent mountain mahogany with snowberry much less abundant; it is fairly dry and usually occurs on southeast aspects. This type is closely related to the "mixed" type of the Lone Pine Ridge upper complex.

10% – Oregon white oak Woodland: see the separate description for this type. It occurs here on east and southeast aspects, typically on lower slope position.

5% – Riparian: in each of the small draws that dissect the area there is a narrow band dominated by dense *Philadelphus*, with *Holodiscus* and occasional bigleaf maple.

5% – Rocky grassy openings: typically on southeast aspects, often with a strong native Idaho fescue component.

20% – Sites with Douglas-fir-Oregon white oak or Douglas-fir/Serviceberry-Oregon Grape conifer potential are mostly currently dominated by Oregon white oak (40-50% cover), mountain mahogany (20-25% cover) and snowberry (32% cover) like the previous two types, but also have consistent serviceberry cover (20%). Also distinctive in this more moist type is the regular presence of chokecherry, baldhip rose, silktassle, *Oemleria*, *Lonicera ciliosa* and occasional thimbleberry. The herb layer also has some distinctive species such as *Trientalis latifolia* and *Moehringia macrophylla*, both of which are usually present with a 2 percent cover. Douglas-fir, black oak and ponderosa pine are present in some of the areas. The potential for some of this area is for an open canopied Douglas-fir or ponderosa pine overstory with Oregon white oak or black oak in the understory and continued fairly dense shrub layers. Some areas are trending toward the Douglas-fir/Serviceberry-Oregon Grape (PSME/AMAL-BEPI) type. There seems to be a trend in other areas toward keeping Oregon white oak as a co-dominant. It is probable that most of this area has not seen much more than scattered conifers for a long time due to repeated fires; however, given enough time without disturbance, the conifer component would develop. This does not mean that the area "should" be pushed toward conifer dominance; rather, it just means that the ecology of the area is more difficult to interpret than was formerly thought. These conifer-potential sites are on north and northeast aspects, often clearly delineated by ridge lines.

The soils in this area are mapped as Bogus very gravelly loam with large inclusions of Heppsie-McMullin complex. Aspect includes north through southeast with northeast dominant. The elevation ranges from 3,000 feet to 4,100 feet.

Conifer Types

Two distinct conifer communities are present in the RNA.

Douglas-fir/Serviceberry-Tall Oregon Grape

This plant association occasionally occurs in the Applegate Valley (though in limited areas). Brock and Callagan (1999a) use this name for this particular Scotch Creek RNA plant community. They have not seen it in the Southern Cascades except in this area. The community is characterized by a lack of white fir, a consistent cover of serviceberry and tall Oregon grape and a lack of poison oak (the latter is not unique here, of course, but in the Applegate Valley its absence would be quite distinctive for the Douglas-fir series). Even though Scotch Creek RNA has totally different soils, this community appears to be nearly identical to the stands found in the Applegate Valley, west of the planning area.

The community occurs on north and northeast slopes mostly at the north end of the RNA. Soils are mapped as Bogus and McNull gravelly loams.

Some of the conifer stands on Slide Ridge, currently dominated by ponderosa pine, are probably best combined with this community. High black oak cover, low Oregon white oak cover and a regular, fairly dense cover of serviceberry and Oregon grape are good characteristics to use identify the community.

White Fir/Dwarf Oregon Grape

This type occupies a small portion of the RNA, at the north end near the east fork of Scotch Creek and at the summit of Lone Pine Ridge on a northeast aspect. The soils are McNull gravelly loam and Farva cobbly loam. Conditions are cool and moist and soils are sufficiently deep to support dense conifer growth. This area represents the lower edge of a typical forest type in the area to the north outside of the RNA. White fir is dominant with an average of 60 percent cover; Douglas-fir is co-dominant with 30% cover. The shrub layer has dwarf Oregon grape (24% cover); the herb layer has *Smilacina stellata* (3%) and *Trientalis latifolia* (2%) as dominants.

Exotic Plants and Noxious Weeds

Scotch Creek RNA has a number of exotic plants (annual grasses) and yellow starthistle, a listed noxious weed. Because of historical activities that introduced weeds—including grazing—and the adjacent Schoheim Road, the RNA is at risk to invasion by other weeds, most immediately Dyer's woad.

Starthistle

Brock and Callagan (1999a) consider the active invasion of starthistle in the mid- to high-elevation grassland communities to be the main management concern in the RNA. They have discovered that approximately 200 acres in the southeast portion of the RNA is currently seriously infested with starthistle. About 10 percent of that area is heavily infested while 30 percent has light to moderate cover. Patch size varies from 200 sq. ft. to up to two acres. Another 200-300 acres of similar habitat is vulnerable to invasion in the near future. Incipient populations are also present along the Schoheim Road. South of the state line fence in California the situation is much worse with most of the grasslands already occupied by starthistle. This area will continue to act as a seed source. Annual-dominated grasslands offer a fertile place for establishment due to the periodic availability of bare soil. One strategy for management may be to establish a higher level of native grass cover to limit the bare soil available for starthistle.

Dyer's Woad

This noxious weed was recently collected along Lone Pine Ridge Road above the Schoheim Road less than 1,500 feet up hill from Scotch Creek RNA. Dyer's woad has the potential to colonize dry hill sides very rapidly.

Medusahead

Brock and Callagan (1999a) found that low-elevation grasslands were somewhat resistant to invasion by medusahead, which they attributed to shallow soils. They suggest that these might be good areas to seed with bluebunch wheatgrass and Idaho fescue.

Other exotic weeds and annual grasses include such species as Japanese brome (*Bromus japonicus*), cheatgrass (*Bromus tectorum*), chess (Bromus secalinus), bulbous bluegrass (*Poa bulbosa*), Klamath weed, (*Hypericum perforatum*), and hedgehog dog-tail (*Cynosurus echinatus*).

Special Status Plants

In addition to their plant community study, Brock and Callagan (1999b) surveyed for special status plants. They found nine species listed by the Oregon Natural Heritage Program (ONHP) (Table L-3). Other occurrences of this species have been found in the Applegate River drainage. Since the draft plan, *Perideridia howellii* has been dropped from the ONHP species list and is no longer tracked. It is left on the following table for reference only:

Table L-3. Scotch Creek RNA Special Status Plants

Scientific Name	Common Name	TNC Rank	BLM/Federal Status	ONHP List
Astragalus californicus	California milk-vetch	G3/S1	A	2
Carex serratodens	Saw-tooth sedge	G5/S2	A	2
Cypripedium montanum	Mountain Lady's-slipper	G4G5/S4	T	4
Isopyrum stipitatum	Dwarf isopyrum	G4?/S3	A	3
Lathyrus lanszwertii var. *tracyi*	Tracy peavine	G4/T3/S1	T	3
Microseris laciniata ssp. *detlingii*	Deling microseris	G4T2/S2	S	1
Ribes inerme ssp. klamathense	Klamath gooseberry	G5T3?/SU	T	3
Perideridia howellii	Howell false-caraway	G4/S3	Off	Off
Solanum parishii	Parish nightshade	G4/S2	A2	2

Brock and Callagan (1999b) searched the Scotch Creek RNA for three other plants with special status in Oregon: Ashland thistle (Circium ciliolatum), Gentner's fritillary (Fritillaria gentneri), and Siskiyou four-o'clock (Mirabilis greenei), but could not find them. Other plants of interest found in the RNA include Tracy pea (Lathyrus lanzwertii var. tracyi), Parish nightshade (Solanum parishii), and Klamath Basin milkvetch (Astragalus californicus). The milkvetch is the most significant, since this is the only known Oregon location. Mountain lady's-slipper (Cypripedium montanum) was also Northwest Forest Plan Survey and Manage species.

Forest Health

The Scotch Creek RNA has few conifer communities. A few riparian areas have white fir stands;

Douglas-fir and Ponderosa pine occur on northerly slopes and in scattered pockets on the ridgelines. The few older stands present have high density, shade tolerant conifers in the understory, likely a result of fire suppression activities. Insects and disease have been documented but are not at epidemic levels.

Animals

There have been no large-scale vertebrate surveys done Scotch Creek RNA. However, there are lists for the general area that indicate species that might be expected in the RNA (see Nelson (1997); Trail (1999); (Alexander 1999); (Parker 1999); and (Runquist 1999).

Mollusks

Parker (1999) discovered pebblesnails (*Hydrobidea, Fuminicola*) in the main channel of Scotch Creek and in the main tributary at T40S, R2E, Sec.1,NE¼. The snails were at discreet locations in the stream associated with cold water inputs detailed in the Hydrology discussion above. The sites were also associated with flow rates that would prevent the settling of fine sediments on the surfaces of coarse sediments, and where enough sunlight penetrated the canopy to stimulate diatom growth. Parker suggests that the pebblesnails might be localized or endemic species since they have no way to move between streams.

Aquatic Insects

Cursory visual surveys of aquatic insects in the Scotch Creek RNA found that the aquatic insect community seemed similar to those in nearby Dutch Oven and Camp Creeks (Parker 1999). If so, it is possible that the insect community in Scotch Creek reflects glacial isolation. Intensive sampling in Dutch Oven Creek (in October of 1993) revealed many species that are more typical of moist, coastal, higher-elevation streams in the western Cascades (Aquatic Biology Associates 1993). Due to the isolation of Dutch Oven and Scotch Creek, there is a high probability that some of the aquatic insects are endemic to these streams. Further sampling may provide answers in the next few years.

Terrestrial Insects

Runquist (1999) collected 60 species of butterflies in the Scotch Creek watershed during the summer of 1999. Because of access problems, only the northern section of the RNA was sampled. Fifty butterflies were collected in the RNA; an additional 10 species were collected along the decommissioned Scotch connector road from Porcupine Gap to Schoheim Road at the north end of the RNA. The remarkable butterfly diversity is a reflection of the geographic location of where ecoregions meet, the diversity of host plants, and the variety of ecological niches.

Amphibians

Parker (1999) surveyed Scotch Creek for stream-dwelling amphibians in early July, 1999. He found none within the RNA. This seemed unusual, since all aquatic habitat requirements were present for Pacific giant salamanders (*Dicamptodon tenebrosus*) and tailed frogs (*Ascaphus truei*). *Dicamptodon* is found in upper Jenny, Keene, and Cottonwood Creeks (Parker 1999). However, these two species appear to be very sensitive to aspect in southern Oregon. It is likely that the combination of a dry terrestrial environment—predominately hot, dry, south-facing slopes—and the low summer water flow makes it difficult for adults to migrate into the watershed from adjacent populations, and for aquatic juveniles to persist during droughts (Parker 1999).

Fish

The falls on Scotch Creek appear to be a fish barrier. Surveys in July of 1999 found no fish above the falls (Parker 1999; USDI 1999). Therefore, within the RNA, fish reside in only about the first one km. (0.6 mile) of Scotch Creek.

Fish in Scotch Creek appear to be redband trout (*Oncorhynchus mykiss ssp.*) (Parker 1999). Genetic studies will have to be completed in order to determine whether this population of trout is the closely-related but more common rainbow trout (*Oncorhynchus mykiss*), or whether it is, indeed, redband trout.

Birds

Alexander (1999) conducted a breeding bird survey of the RNA in June of 1999. Twenty monitoring stations were established. Sixteen were visited twice. A total of 47 species were encountered. Sixteen species are conservation focal species for Oregon and/or California.

Spotted owls are known to nest in the immediate vicinity of the RNA. Timbered portions of the RNA have been mapped as roosting and foraging habitat using modified McKelvie Spotted Owl habitat criteria.

Exotic Animals

There are no alien animals known in the area with the exception of cattle. Opossum and starlings are documented from the lowlands in the Rogue and Shasta Valley, but haven't been documented in the RNA.

Cattle

This area is part of the Camp Creek Pasture of the Soda Mountain allotment.

Site History

There have been no cultural resource surveys of the Scotch Creek RNA and no archeological or historical sites have been recorded. Native Americans who may have visited the Scotch Creek and utilized its resources include the Klamath and the Shasta.

There were numerous resources upon which these native peoples depended. Roots and bulbs, such as camas (*Camassia*) and various forms of *Perideridia* (e.g., ipos, yampa) provided starchy staples as did acorns from oak trees. Fish, deer, elk, and small mammals provided staple proteins, augmented by a wide variety of berries, nuts, and seeds (e.g., tarweed seeds, *Madia* spp.). Other plants and animals were used for fiber, tools, clothing, and medicines.

Native peoples employed a number of techniques to enhance those resources useful to them. Fire was probably the most significant tool: it assisted in promoting and maintaining staple crops, such as acorns and tarweed, and maintained open meadows and prairies, which were crucial locations for subsistence resources including game, roots, bulbs, berry patches, and grass seeds. Fire also promoted habitat important to large game. Burning took place during the spring or fall and at specific intervals, and contributed to the development and maintenance of prairies and savannahs, oak and oak/pine woodlands, and upland meadows (Pullen 1996).

Settlement of southern Oregon by Euro-Americans increased substantially after gold was discovered in Jacksonville in 1852. Newcomers settled throughout the Rogue Valley, utilizing open savannas and grasslands for agriculture and livestock ranching. Conflicts over land between miners and settlers and Native Americans culminated in removal of the remaining Native Americans. The Klamath Indians were confined to the Klamath Reservation east of the Cascades. Some Shasta families however, managed to remain in the Shasta Valley and along the Klamath River, or escaped from the northern reservations to find their way home.

Historical land use of the Scotch Creek area by Euro-Americans has been predominantly grazing in the open meadows and pine/oak savannas. Reports indicate that the area was heavily grazed by cattle for more than 100 years.

Human Features

There are no human-made features in the RNA with the exception of the Schoheim Road and the short unnamed spur road south of the Schoheim between the two branches of Scotch Creek. An old road remnant is present in the bottom of Scotch Creek.

Surrounding Land Use

The RNA is surrounded by monument lands on the north, west, and east. The Soda Mountain Wilderness Study Area is adjacent to the northeast and is managed to maintain its wilderness values (USDI 1995). The Horseshoe Ranch Wildlife Area (Redding BLM and California Department of Fish and Game) along the southern boundary is managed by the California Department of Fish and Game, primarily as deer winter range.

MANAGEMENT CONSIDERATIONS

Botanical/Plant Communities

Agency Standards

The following standards, policies, and directives regard maintaining, protecting or restoring relevant and important botanical values of RNAs:

- *The overall goal of RNAs is to preserve natural features in as nearly an undisturbed state as possible for scientific and educational purposes. Natural processes should dominate, although deliberate manipulations which simulate natural processes are allowed in specific cases (USDI 1986).*
- *RNAs are established primarily with scientific and educational activities intended as the principal form o resource use for the short and long term. Research proposals should be submitted to the appropriate BLM field office prior to commencing work. Studies involving the manipulations of environmental or vegetational characteristics or plant harvest must be approved. Because the overriding guidelines for management of an RNA is that natural processes are allowed to dominate, deliberate manipulation, such as experimental applications, is allowed only on a case specific basis when the actions either simulate natural processes or important information for future management of the RNA is gained (BLM Manual, 1623.37 (A)(B)).*
- *Preserve, protect or restore native species composition and ecological processes of biological communities (including Oregon Natural Heritage Plan terrestrial and aquatic cells) in research natural areas. These areas will be available for short- or long-term scientific study, research, and education and will serve as a baseline against which human impacts on natural systems can be measured. (USDI 1995a)*
- *Manage Oregon white oak woodlands to maintain or enhance values for wildlife habitat, range, botanical values, and biological diversity. Utilize prescribed fire to maintain habitat conditions within the Oregon white oak woodland community (USDI 1995a).*

Current Information

The ecological condition of all plant communities identified as key elements of the RNA were considered to be of overall high quality when the area was nominated as an RNA in 1991 (Schaaf, 1991). Brock and Callagan (1999a) found that with the exception of some weed issues, the plant communities in the RNA are in good condition. Non-native weedy species, particularly yellow starthistle (*Centaurea solstitialis*), hedgehog dogtail, (*Cynosurus echinatus*), medusa-head (*Taeniatherum caput-medusae*), and Bull thistle (*Cirsium vulgare*) occur in some of the savanna and woodland areas and threaten the integrity of these plant communities. The spread of these and other non-native species into the RNA from surrounding lands, especially from the south in California and along the Schoheim Road, is an ongoing threat.

Exclusion of a natural fire regime has resulted in encroachment of shrubs and conifers into the edges of open oak/grass savanna areas, decreasing the extent of this plant community in the RNA. Underbrush and tree density have increased in woodlands and forest areas, increasing fire fuel loads and the risk of high-intensity, stand-replacement fires.

The main objective in managing plant communities within the RNA is to maintain or enhance their key attributes. Ideally this would be accomplished by allowing succession to occur as a result of a natural disturbance regime, which could include wildfire, storms, normal mortality, drought, etc. However, because of past human interference, in the form of fire suppression and livestock grazing, proactive management is necessary to re-establish natural processes.

Over time all plant communities are subject to natural disturbances and corresponding succession. It is not the intention of RNA management actions to halt this natural succession and disturbance process at one particular stage. Using prescribed burning as a management tool is an attempt to re-introduce fire as a natural process. Excluding fire during the past 100 years has resulted in a build-up of fire fuel loads and encroachment of trees and shrubs into savannas and meadows. Re-introducing fire in small areas under controlled circumstances would reduce fire fuel loads, as well as improve the ecological condition of plant communities in which fire has historically been a component by restoring native species composition. Allowing naturally occurring fires to run their course in the RNA (and outside) is somewhat constrained by the proximity of private property to the northwest of the RNA north of Pilot Rock. Utilizing fire in small areas at different times throughout the RNA is intended to resemble the patchiness of natural disturbances. With this approach, at any one time different areas of each plant community will be in different successional stages, mirroring normal ecosystem conditions.

Outlined below are goals, issues relating to those goals, and management actions for each plant community requiring management within the RNA. Additional important aspects affecting the management of plant communities within the RNA are discussed under separate headings (e.g., introduced and noxious weedy species, insects and disease, livestock grazing, timber harvest, etc.). Monitoring of plant communities, discussed in Section VI, is also a vital process of tracking and evaluating responses to natural or prescribed disturbances, determining the effectiveness of management actions or research activities, and making necessary adjustments to insure that management goals continue to be met.

Riparian

(California Black Oak-Bigleaf Maple Riparian Woodland & Riparian Shrub Community)

Goals

Maintain the function, structure and vegetative composition of the riparian zones, including seeps and springs.

Current Information

These two plant communities are currently in good condition. Open galleries of black oak show limited juniper establishment. This may become a problem in the future necessitating prescribed fire or manual treatment. Livestock impact is no longer a threat to this plant community, as little utilization occurs.

Issues

- Riparian areas are currently little utilized by livestock grazing although localized areas historically received periodic high utilization.
- Lack of riparian survey data.

Management Actions

- Perform riparian surveys documenting hydrologic and riparian vegetation condition.
- Restore riparian areas within the RNA that are not properly functioning based on results of riparian surveys.
- Remove livestock grazing from riparian communities if necessary.

Oregon white oak woodland

(Oregon white oak/Tall Oregon Grape Woodland)

Goals

- Maintain open woodland, dominated by Oregon white oak, ponderosa pine and associated native species.
- Reduce Douglas-fir and incense cedar conifer seedlings.
- Reduce fire fuel loads.

Issues

- Fire suppression resulting in conifer recruitment and increased fuel loads and ladders.
- Competition from non-native plant species, especially annual grasses and scattered patches of yellow starthistle.
- Limited access to the site.
- Limited funding to accomplish objectives.
- Constraints to prescribed burning, including air quality controls, proximity to adjacent private landowners, topography, season of burn, availability of native plant seeds and starts for re-planting after burning, restrictions on using large equipment.
- Sudden Oak Disease (SOD) is present in oak woodlands in California. This disease is affecting vast areas of oak woodlands in central and northern California.

Management Actions

- Establish pre-project monitoring plots to gather baseline data for post-project comparison to determine the effectiveness of the management activity.
- Utilize prescribed burning or manual thinning to reduce conifer recruitment and fire fuel loads.
- Eliminate patches of yellow starthistle using all available tools.
- Re-seed between trees after burning with native grasses and forbs.

Rock Outcrops

Goals

Maintain these sparsely vegetated but important niche communities.

Current Information

Plant communities associated with rock outcrops are likely stable. These fine feature communities are important because they provide a unique niche for certain plant species, including lichens and mosses. Certain weedy species (e.g., annual grasses such as cheatgrass) can occur in these communities.

Issues

None.

Management Actions

Survey these sites with future botanical inventories.

Grasslands

(Low Elevation Grassland-Rock Outcrop Complex & Middle- and Higher-Elevation Grassland-Oregon white oak Woodland Complex)

Oak Woodland component

Goals

- Maintain open canopied oak woodlands, and understory grasslands, dominated by native perennial grasses and forbs.
- Reduce noxious weeds and invasive annual grasses.
- Reduce fire fuel loads.

Issues

- Competition from non-native plant species.
- Conifer encroachment as a result of fire suppression.
- Limited access to the site.
- Limited funding to accomplish objectives.
- Constraints to prescribed burning, including air quality controls, proximity to adjacent private landowners, season of burn, availability of native plant seeds and starts for re-planting after burning, restrictions on using heavy equipment.

Management Actions

- Establish pre-project monitoring plots to gather baseline data for post-project comparison to determine the effectiveness of the management activity.
- Utilize all management tools available to reduce conifer invasion, thin dense stands of Oregon white oak, and favor the abundance of native herbaceous understory species over invasive annual grasses.
- Contain and eradicate patches of yellow starthistle using all available means.
- Re-seed after weed treatment/burning with native grasses and forbs.

Grassy meadow component

Goals

- Maintain open meadows/grassland by reducing the encroachment of conifers and shrubs.
- Decrease non-native and increase native species.
- Protect and maintain the rare *Astragalus californicus* population. It is the only population in Oregon.

Issues

- Competition from non-native weedy species. Yellow starthistle is especially dominant in the mid- to high-elevation grassland; expansion of this species is likely. Annual grasses (Japanese brome and cheatgrass) are a dominant species in the low-elevation grasslands.

- Encroachment of trees and shrubs into meadows from surrounding woodlands.
- Limited access to the site.
- Limited funding to accomplish objectives.
- Constraints to prescribed burning, including air quality controls, proximity to adjacent private landowners, season of burn, availability of native plant seeds and starts for re-planting after burning, restrictions on using large equipment.
- Presence of a rare plant that can complicate restoration activities

Management Actions

- Collect and propagate native grass and forb seeds from savanna areas of the RNA.
- Establish pre-project monitoring plots to gather baseline data for post-project comparison to determine the effectiveness of the management activity.
- Tailor management activities to maintain the *Astragalus californica* population in mid- to high-elevation grasslands, and to decrease the yellow starthistle populations..
- Eradicate large patches of yellow starthistle using all available means.
- Prescribe burn meadows to reduce non-native weedy species and encroaching trees and shrubs or manually thin trees and shrubs, particularly seedlings and saplings, in and around the perimeter of meadows/savannas.
- Re-seed burned areas with native grasses and forbs.

Rosaceous Chaparral

(Oregon white oak/Klamath Plum-Wedgeleaf Ceanothus-Oregon white oak/Mountain Mahogany-Klamath Plum Chaparral Complex (Lone Pine Ridge)

Goals

- Maintain healthy chaparral communities.

Current Information

These plant communities are commonly described as rosaceous chaparral. Long-term plant community dynamics are not yet fully understood. The mollic epipedon described by the Soil Conservation Service (SCS) manual suggests past domination by grass. The abundance of this plant community could be attributed to fire suppression. The presence of oak within the rosceous chapparal, and fire dependent species, such as buckbrush, imply the importance of fire within these plant communities. The rare plant Tracy peavine (*Lathyrus lanzwertii var. tracyi*) occurs in very small populations in Oregon white oak/mountain mahogany chaparral in the RNA. This rare endemic is only known for a few sites in Oregon. The role of fire for this species is also not well understood; it could benefit from periodic disturbance events.

Issues

- Lack of ecological information and understanding of the relationship of fire within these communities.
- Dense fuel loads.

Management Action

More study of these plant communities—and key species within them—is needed before any implicit management action is formulated.

Conifer Communities

(Douglas-fir/Serviceberry-Tall Oregon Grape & White fir dwarf Oregon Grape)

Goals

- Maintain ecosystem function in the limited Douglas-fir and White fir communities.
- Protect mature forest stands from catastrophic disturbance events such as wildfire and insect outbreaks.
- Design management activities that restore natural ecosystem and disturbance processes.

Issues

- Limited access to the site.
- High cost and uncertain funding to accomplish objectives.
- Constraints to prescribed burning, including air quality controls, proximity to adjacent private landowners, season of burn, restrictions on using large equipment.
- Restrictions on commercial harvest.

Management Action

- Periodic surveys and monitoring of conditions in conifer communities.
- Reduce fuel loads and risk of catastrophic fire and insect outbreaks by thinning from below and prescribed burning.

Introduced and Noxious Weed Species

Policy and Agency Standards

The introduction of exotic plant and animal species is not compatible with the maintenance or enhancement of key RNA features. Certain re-introductions of formerly native species using proper controls may be specified in plans.

Take any action necessary to prevent unnecessary or undue degradation of the lands Federal Land Policy and Management Act (FLPMA, 1976).

The public Rangelands Improvement Act of 1978 directs the BLM to "manage, maintain, and improve the condition of public rangelands so they become as productive as feasible..." (RIA, 1978, Section 2(b)(2)). The priority on managing this area is for productive plant community, not rangeland productivity.

Goals

- Maintain and/or restore plant communities.
- Contain or eradicate exotic and noxious weeds.
- Prevent the introduction of new exotic or noxious weed species.

Current information

Several areas within the RNA (see Botanical section) are dominated by introduced (alien) grasses, namely medusa-head rye (*Taeniatherum caput-medusae*), hedgehog dogtail (*Cynosurus echinatus*), bulbous bluegrass (*Poa bulbosa*), Japanese brome (*Bromus japonicus*) and cheat grass (*Bromus tectorum*). Small occurrences of yellow alyssum (*Alyssum alyssoides)*, bull thistle (*Cirsium vulgare*), and dyers woad (*Isatis tinctoria*) are also documented. There are large yellow starthistle (*Centaurea solstitialis*) populations in the mid- to high-elevation grasslands and along the Schoeheim Road (Brock and Callagan 1999a). Hand pulling weeds was started in 2003 and takes place annually.

Issues

- Exotic plants and noxious weeds threaten the integrity of key features within the RNA. These occurrences were mapped in 1999.
- Disturbance as a result of wildfire, vegetation treatments (burning or thinning), or livestock grazing can create optimum habitat for exotic and noxious weeds.
- High cost for weed treatments due to poor access.
- Lack of proven methods for controlling large infestations of exotic grasses like cheatgrass or bulbous bluegrass.
- Lack of large quantities of native grass and forb seed for restoration.

Management Actions

- Control weeds within and adjacent to the RNA using an integrated weed management approach utilizing all appropriate means (mechanical, cultural, biological, and chemical).
- Collect and propagate native seed sources for use within the RNA.
- Vegetative treatments to enhance key RNA features must be tailored so as to (1) reduce weed infestations; and (2) not increase existing populations.
- Evaluate whether grazing can be used as a tool to promote maintenance of the key features of the RNA in the grazing study, especially reducing non-native species. If it is not, remove the Scotch Creek RNA from the Soda Mountain allotment.

Threatened, Endangered, Sensitive, and Rare Species

Policy and Agency Standards

The Endangered Species Act (USDI 1988, as amended) governs and provides for the conservation of listed and proposed species, and their habitats, on federal lands. The BLM policy regarding Special Status Species, including federally listed and proposed species, state listed species, and species designated as "sensitive" is to protect and conserve federally listed and proposed species, manage their habitat to promote recovery, and (for sensitive and state listed species) to ensure that Bureau actions will not contribute to the need to list sensitive or state listed species as federally listed (BLM Manual 6840).

Goals

Maintain or enhance BLM Special Status Species occurrences and habitats within the RNA.

Plant Species

Current Information

Nine BLM Special Status Species are documented in the RNA, California milk-vetch, (*Astragalus californicus*), saw-tooth sedge (*Carex serratodens*), mountain lady's-slipper, (*Cypripedium montanum*), dwarf isopyrum *Isopyrum stipitatum*, Tracy peavine *(Lathyrus lanszwertii var. tracyi)*, Detling's microseris (*Microseris laciniata ssp. detlingii*), Klamath gooseberry (*Ribes inerme ssp. klamathense*), Howell's false-caraway (*Perideridia howellii*), and Parish nightshade (*Solanum parishii*).

Two of these species, Klamath gooseberry and Howell's false caraway were found in the riparian zone of Scotch Creek. Howell false-caraway is fairly "common" within the RNA and within the surrounding watersheds in the monument.

Three species were found in grassland habitats: saw-toothed sedge, Detling's microseris, and the

California milk-vetch. All three occur in areas with fairly high levels of exotic species or noxious weeds. This is the only known site for the occurrence of the California milk-vetch in Oregon, and Brock and Callagan (1999b) documented a competitive relationship between this species and yellow star thistle. The ability of this species to persist in the RNA is a concern unless the grasslands are restored. A small population of Detling's microseris was also found in one location. The identification of saw-toothed sedge has not been confirmed to date.

Three species are documented for the chaparral communities: dwarf isopyrum, Tracy peavine, and Parish nightshade. The dwarf isopyrum is documented for several locations in the RNA, and has been found in several locales within the monument. Several patches of Tracy peavine are present in the Oregon white oak chaparral, but all are very small in size. Only two plants of Parish nightshade were seen in the chaparral at the outer rocky edge of the riparian zone, south of the falls.

Only one occurrence of mountain lady's slipper was found in a conifer community. The occurrence was fairly large for this orchid (45 plants) and was in a Ponderosa pine and black oak stand on a northerly slope. Suitable habitat exists for several other BLM Special Status plants, including the Federally listed Gentner's fritillary (*Fritillary gentneri*); however no populations were found.

Issues

- No monitoring of existing populations.
- Affects from the limited grazing are not known.
- Exotic and noxious weeds are likely threatening rare plants in the grasslands.

Management Actions

- Periodic monitoring of existing occurrences.
- Establish formal monitoring plots in the grasslands to evaluate the affects of noxious weed invasion and treatment (especially for *Astragalus californicus*).
- Tailor management actions (e.g., noxious weed treatment and fire) to protect or enhance rare plant populations.

Wildlife Species

Current Information

There is a Northern Spotted Owl center of activity in the immediate vicinity of the RNA. Part of the nest stand used by this pair of owls falls inside the RNA boundary.

Management Action

Any habitat manipulation activities (burning, vegetation manipulation, etc) proposed to occur in the RNA should take the habitat and security requirements of this owl site into account. Such projects should be planned with the same or more stringent constraints as would be placed on such activities outside the monument/RNA.

Insects and Pathogens

Agency Standards

Ideally, catastrophic natural events, such as insect infestations, should be allowed to take their course. Insect or disease control programs should not be carried out except where infestations threaten adjacent vegetation or will drastically alter natural ecological processes within the tract (Appendix R of the CSNM draft plan).

Goals

- Maintain historic ecosystem functions in the forested plant communities.
- Protect mature forest stands from catastrophic disturbance events such as wildfire and insect outbreaks.
- Design management activities that restore natural ecosystem and disturbance processes.

Current Information

The Scotch Creek RNA has few areas occupied by conifer communities. Most occur on north and northeast slopes in the northern portion of the RNA. A dense understory of young conifers is found in much of the area, and is likely a result of fire exclusion activities. As a result, increased (but not epidemic level) mortality due to beetle outbreak has been noted. Some true fir engraver incidence is present in the white fir/dwarf Oregon grape association, which occurs in the Northern portion of the RNA along the creek. Individual ponderosa pine are being attacked by bark beetle in conifer and non-conifer plant communities.

Insects

- Mountain pine beetle (*Dendroctonus ponderosa*)
- Western pine beetle (*Dendroctonus brevicomis*)
- Red turpentine beetle (*Dendroctonus valens*)

  Individual pines are being infested at a higher than normal level by these species of beetles. Generally, this is not a serious problem within the RNA. Within the Klamath River Ridges ecoregion, plant communities that support pine are often too dense, thereby creating a higher risk for beetle outbreak. In both the short- and long-term outlook, mature ponderosa pine will be subject to increased beetle risk. Prescribed burning and thinning small trees around pine could reduce this risk. Given the inaccessibility of the area, efforts should be made to protect the most highly valued areas by proactive thinning/burning projects.

- Fir engraver (Scolytus ventralis)

  Beetle and root rot often occur in association with white fir forests. Dense stands of white fir and associated pockets of laminated root (*Phellinus weirii*) often show increased levels of fir engraver. Root rot and fir engraver are the common disturbance agents in high elevation white fir in contrast to fire events in lower elevation mixed conifer. Very light noncommercial thinning and low level prescribed burns should be done on a trial basis in the Scotch Creek RNA stand in an effort to reduce engraver incidence. Currently, laminated root rot is not found at a sufficient level for concern; further baseline data collection may identify other areas where it is present.

Management Actions

Thinning small trees and brush and prescribed burning will increase overall forest stand vigor, while reducing risks to beetle infestation and stand replacement fires. These activities should follow collection of baseline data and development of specific objectives at a forest stand level or plant association level.

Pathogens

- Annosus root rot (*Heterobasidion annosum*)

  Previously harvested areas at the northern extreme of the RNA (mainly those near roads) may have detectable but as yet undetermined amounts of annosus root rot present. This incidental occurrence is considered serious. White fir trees removed for hazard control or other reasons should be treated with *Sporax* to prevent annosus spread. While it is unlikely that very many trees of sufficient size would be cut for any reason, all effort should be made to prevent this root rot from entering new areas.

- True fir dwarf mistletoe (*Arceuthobium abietinum*)
- Doug-fir dwarf mistletoe (*Arceuthobium douglasii*)
- Western dwarf mistletoe on ponderosa pine (*Arceuthobium campylopodum*)
- Juniper mistletoe (*Phorodendron densum*)
- Incense cedar mistletoe (*Phorodendron libocedri*)
- Oak mistletoe (*Phorodendron villosum*)

  Dwarf mistletoe is present on white fir, Doug-fir, and ponderosa pine in the RNA. Three mistletoe species have been identified occurring on Incense cedar, Oregon white oak and juniper. While these parasitic plants sometimes cause mortality, they are present at endemic levels and are not considered to be a problem.

Management Activities

Thinning small trees and brush, and prescribed burning will increase forest stand vigor thereby reducing susceptibility to pathogens that cause forest diseases. These activities should be preceded by collection of baseline data and development of specific objectives at a forest stand or plant association level.

Needed Information

More baseline data is needed for the conifer plant communities in the RNA. This will serve to inventory and document insects and pathogens. Five-year inventories are needed to assess overall stand conditions.

Summary

This is not a comprehensive list of all insects and pathogens in the RNA. For instance, little specific information is known about insects and pathogens occurring in the Oregon white oak woodlands, other deciduous trees, or shrubs. In this plan, the species thought to present the most likely problems to conifers or affecting the RNA were included. Any management activity proposed in the RNA needs to evaluated further before its implementation. The insects and pathogens listed here typify those found at the Klamath River Ridges ecoregional level. Generally, forest stand densities and fuel loading are at a level where beetle outbreak risks and fire behavior threaten forest plant associations at a greater than historic natural level.

Lands and Boundary/Edge Effects

Policy and Agency Standards

- Maintain or increase public land holdings by retaining public lands and acquiring non-federal lands with high public resource values.
- "Acquire lands and interests in lands needed to manage, protect, develop, maintain, and use resources on public lands...in conformity with land-use plans that apply to the area involved." (BLM Manual, 2100.05, 1984)

Goals and Objectives

Maintain the integrity of the RNA.

Current Information

The Scotch Creek RNA covers an area of 1,800 acres of public land. The boundary is defined by the limits of the watershed and property lines along the California border. Private land only borders a small area in Scotch Creek. Immediate property to the west, north and east is all BLM public lands.

Management Actions

Periodic inventory to assure no trespass from activities on non-federal lands along the California border.

Roads and Utilities Rights-of-Way

Policy and Agency Standards

". . . public uses such as roads, pipelines, communication sites, and power lines should avoid the designated area and be anticipated in activity plans. Road closures or restrictions may be considered appropriate in some instances." (USDI, 1986) Roads are generally prohibited in RNA's; however, old roads or unimproved tracks often exist (PNW Interagency Natural Area Committee, 1991).

Goals

Ensure that existing roads do not contribute to any loss of integrity of the RNA communities, including the riparian area.

Current Information

There are no utility rights of way in the RNA. Schoheim Road (BLM 41-2E-10.1) serves as the boundary along the northern and eastern edge, and this road has been closed. No future ROW grant requests are anticipated through the RNA. An old abandoned road exists along Scotch Creek on the California side on private land.

Goals and Objectives

Maintain the roadless character of the RNA. Insure that Schoheim Road does not cause any resource damage to features in the RNA.

Management Actions

Monitor the existing Schoheim Road.

Fire Management

Agency Standards

In 1995, the latest Federal Fire Policy (USDA/USDI 1995) was issued directing federal land managers to expand the use of prescribed fire in order to:

- "…reduce the risk of large wildfires due to unnatural fuel loadings, and to restore and maintain healthy ecosystems.
- base the use of prescribed fire on the risk of high intensity wildfire and the associated cost and environmental impacts of using prescribed underburning to meet protection, restoration, and maintenance of crucial stands that are currently susceptible to large-scale catastrophic wildfire.
- Reintroduce underburning across large areas of the landscape over a period of time to create a mosaic of vegetative conditions and seral stages. This is accomplished by using prescribed fire under specific conditions in combination with the timing of each burn to reach varying fire intensities. Treatments should be site-specific because some species with limited distribution are fire intolerant.
- Where perpetuating a seral stage of plant succession is important, prescribed fires may be specified in the activity plan, but only where they provide a closer approximation of the natural vegetation and governing processes than would otherwise be possible. Application of prescribed burns normally should be performed closely approximating the "natural" season of fire, frequency, intensity, and size of burn. The burn should be followed by a fire effects report documenting vegetative response.
- Adhere to smoke management and air quality standards of the Clean Air Act and State Implementation Plan for prescribed burning."

Goals

Re-introduce fire into the RNA to re-establish a natural ecological process and to maintain, enhance or restore the structure and composition of the protected plant communities. Specific objectives include the following:

- Increase the extent of oak/pine savannas by removing encroaching hardwood and conifer seedlings and shrubs.
- Reduce non-native and increase native grass and forb species.
- Invigorate chaparral stands by removing any decadent shrubs and creating openings for native grasses and forbs.
- Maintain and improve existing grasslands and meadows by using prescribed fire to invigorate native grasses, provide a good bed for reseeding, reduce encroaching shrubs and conifers.
- Control wildfire in mixed conifer stands to protect losses to surrounding land owners.
- Reduce fuel loadings created from thinning activities.

Current Information

Fire is recognized as a key natural disturbance process throughout Southwest Oregon (Atzet and Wheeler 1982). Human-caused and lightning fires have been a source of disturbance to the landscape for thousands of years. Native Americans influenced vegetation patterns for over a thousand years by igniting fires to enhance values that were important to their culture (Pullen, 1996). Early settlers to this area used fire to improve grazing and farming and to expose rock and soil for mining. Fire has played an important role in influencing successional processes. Large fires were a common occurrence in the area based on fire scars and vegetative patterns and were of varying severities.

In the early 1900s, uncontrolled fires were considered to be detrimental to forests. Suppression of all fires became a major goal of land management agencies. From the 1950s to present, suppression of all fires became efficient because of an increase in suppression forces and improved techniques. As a result of the absence of fire, there has been a build-up of unnatural fuel loadings and a change to fire-prone vegetative conditions.

Based on calculations using fire return intervals, five fire cycles have been eliminated in the southwest Oregon mixed conifer forests that occur at low elevations (Thomas and Agee 1986). Species, such as ponderosa pine and oaks, have decreased. Many stands that were once open are now heavily stocked with conifers and small oaks, which has changed the horizontal and vertical stand structure. Surface fuels and laddering effect of fuels have increased, which has increased the threat of crown fires which were once historically rare.

Many seedling and pole size forests of the 20th century have failed to grow into old-growth forests because of the lack of natural thinning once provided by frequent fire. Frequent low intensity fires serve as a thinning mechanism, thereby naturally regulating the density of the forests by killing unsuited and small trees. Consequently, much old-growth forest habitat has been lost, along with diminished populations of old-growth dependent and related species. In addition, ponderosa pine trees that thrive in fire prone environments are quickly shaded out by the more shade tolerant Douglas-fir or white fir species in the absence of fire. As a result, some late-successional forests have undergone a rapid transition from ponderosa pine stands to excessively dense true fir stands. Trees growing at lower densities, as in ponderosa pine stands, tend to be more fire-resistant and vigorous. Eventually they grow large and tall, enhancing the vertical and structural diversity of the forest. Some populations of organisms that thrive in the more structurally diverse forests that large trees provide are becoming threatened.

Many forests developed high tree densities and produced slow growing trees rather than faster growing trees after abrupt fire suppression became policy in about 1900. Trees facing such intense competition often become weakened and are highly susceptible to insect epidemics and tree pathogens. Younger trees (mostly conifers) contribute to stress and mortality of mature conifers and hardwoods. High density forests burn with increased intensity because of the unnaturally high fuel levels. High intensity fires can damage soils and often completely destroy riparian vegetation. Historically, low intensity fires often spared riparian areas, which reduced soil erosion and provided wildlife habitats following the event.

The absence of fire has had negative effects on grasslands, shrublands, and woodlands. Research in the last few decades has shown that many southern Oregon shrub and herbaceous plant species are either directly or indirectly fire-dependent.

Several shrub species are directly dependent on the heat from fires for germination; without fire, these stands of shrubs cannot be rejuvenated. Grass and forbs species may show increased seed production and/or germination associated with fire.

Indirectly fire-dependent herbaceous species are crowded out by larger-statured and longer-lived woody species. This is particularly so for grasses and forbs within stands of wedgeleaf ceanothus and whiteleaf manzanita with a high canopy closure. High shrub canopy closure prevents herbaceous species from completing their life-cycle and producing viable seed. Many grass species may drop out of high canopy shrub lands in the absence of fire because of their short-lived seed-bank.

Climate and topography combine to create the type of fire regime found in the Scotch Creek RNA. Fire regime is a broad term and is described as the frequency, severity, and extent of fires occurring in an area (Agee 1990). Vegetation types are helpful in delineating different fire regimes. The Scotch Creek RNA is classified as a Low-Severity (80 percent) and Moderate-Severity (20 percent) fire regimes based on the vegetation types found within the RNA. The low-severity regime is characterized by vegetation types such as grasslands, shrublands, hardwoods, mixed hardwoods, and pine, which are similar to the Interior Valley Vegetative Zone of Franklin and Dyrness (1988). These plant communities are adapted to recover rapidly from fire and are directly or indirectly dependent on fire for their continued persistence. A low-severity regime is characterized by nearly continual summer drought; fires are frequent (1-25 years), burn with low intensity, and are widespread. The dominant trees within this regime are adapted to resist fire due to the thick bark they develop at a young age. The intermixture of pine-oak within the RNA suggests the fire return interval of about 10 years (Agee and Huff 2000). The moderate-severity regime is associated with the Mixed Conifer Vegetative Zone of Franklin and Dyrness (1988). A moderate-severity regime is characterized by long summer dry periods, fires are frequent (25-100 years), burn with different degrees of intensity, and burn in a mosaic pattern across the landscape. Some stand replacement fires as well as low-intensity fires may occur depending on burning conditions.

The BLM has a master cooperative fire protection agreement with the Oregon Department of Forestry (ODF). This agreement gives the responsibility of fire protection of all lands within the Scotch Creek RNA to the ODF. This contract directs ODF to take immediate action to control and suppress all fires. Their primary objective is to minimize total acres burned while providing for fire fighter safety. The agreement requires ODF to control 94 percent of all fires before they exceed 10 acres in size.

Between the years 1967 and 1999, there have been two fires within the Scotch Creek RNA. Both fires were started by lightning and occurred in the years 1984 and 1992. Suppression action was taken by ODF, resulting in both fires being contained at 0.1 acre in size.

Currently, some fire suppression techniques are not allowed within the Scotch Creek RNA, in order to minimize disturbance to the area. All vehicles are restricted to existing roads and the use of tractors are not allowed within the RNA. Moreover, Scotch Creek is not be utilized as a water source and the use of retardant is prohibited near the creek.

Prescribed fire can be used to meet resource management objectives which include, but are not limited to, wildfire hazard reduction, restoration of desired vegetation conditions, management of habitat and silvicultural treatments. When utilizing prescribed fire it should be based on the fire history of the area and past vegetation patterns known for the area. The application of prescribed fire should closely approximate the frequency, intensity, size, and the "natural" season of fire when possible.

Many factors influence fire behavior and the effects fire will have on a resource. Some are beyond our ability to control such as the location of where a fire starts, weather and topography. Fuels management programs focus on those factors which can be influenced by humans, such as fuels and vegetation. Prescribed fire is one tool that can be utilized to regulate fuels and vegetation.

A primary objective of any fuels management activity in the RNA is to alter existing fuels in order to protect or minimize damage to existing late-successional habitat from wildfires that may occur.

All prescribed burning would comply with the guidelines established by the Oregon Smoke Management Plan (OSMP) and the Visibility Protection Plan. In compliance with the Oregon Smoke Management Plan, any prescribed burning activities within the RNA require pre-burn registration of all prescribed burn locations with the Oregon State Forester. Registration includes specific location, size of burn, topographic, and fuel characteristics. Advisories or restrictions are received from the State Forester on a daily basis concerning smoke management and air quality conditions.

Prescribed burns would be conducted within the limits of a Burn Plan, which describes prescription parameters so that acceptable and desired effects are obtained.

Issues

- Limited access to and within the RNA.
- Restrictions against using large equipment in fire treatment or suppression activities.
- Constraints to season of prescribed burning due to air quality and fire season restrictions.
- Limited funding for repetitive treatments and restoration projects.
- Limited availability of native grass and forb seed or starts for re-planting.
- Concerns that fire can create conditions optimal for the expansion of annual grasses and noxious weeds like yellow starthistle.

Management Actions

- Develop a fire management plan and memorandum of understanding for the entire RNA, coordinated between BLM and ODF, including a plan for prescribed burning.
- Maintain or enhance known sites of special status plant populations.
- Establish pre-burn plots in targeted plant communities to gather baseline data of vegetation species composition, density, etc., to determine the effects of fire on affected plant communities.
- Through prescribed burning, reintroduce fire as a natural process, based on past fire regimes.
- Conduct post-project monitoring of plant communities to determine the effectiveness of management activities in achieving RNA goals. Adapt management activities as necessary.

Hydrology

Policy/Agency Standards

Medford ROD/RMP (USDI 1995, as amended by Aquatic Conservation Strategy [ACS SEIS]) objectives for water resources include compliance with State water quality requirements to restore and maintain water quality necessary to protect designated beneficial uses for the Klamath River Basin. The overall goal of the ACS, is to restore and maintain the ecological health of watersheds and aquatic ecosystems contained within them on public lands. Included are specific objectives to:

- Maintain and restore the physical integrity of the aquatic system.
- Maintain and restore water quality necessary to support healthy riparian, aquatic, and wetland ecosystems.
- Maintain and restore the sediment regime under which aquatic ecosystems evolved.
- Maintain and restore the species composition and structural diversity of plant communities in riparian areas and wetlands to provide adequate summer and winter thermal regulation, nutrient filtering, appropriate rates of surface erosion, bank erosion and channel migration, and to supply amounts and distribution of coarse woody debris sufficient to sustain physical complexity and stability.
- Maintain and restore habitat to support well-distributed populations of native plant, invertebrate, and vertebrate riparian-dependent species.

Goals and Objectives

Restore and maintain a properly functioning watershed condition and the ecological health of aquatic ecosystems within the Scotch Creek RNA.

- Reduce or eliminate surface disturbing activities such as roads/jeep trails.
- Restore and maintain native riparian vegetation along streams and springs/seeps.
- Achieve properly functioning riparian areas.

Current and Needed Information

Hydrologic features in the Scotch Creek RNA include intermittent and perennial streams. Current hydrologic condition of the RNA is unknown. A stream/riparian survey is necessary to determine watershed concerns affecting water quantity or quality. Except for 129.4 acres of timber land owned by Boise Cascade Corporation east of Porcupine Mountain in the south half of section 36, the remainder of the Scotch Creek Subwatershed above and including the RNA is managed by the BLM. Management of the approximately 0.7 intermittent stream miles on the private timber land follows the Oregon State Forest Practice Administrative Rules, which do not require protection of vegetation along small, intermittent stream channels. Management actions within or above the RNA having the greatest potential to adversely affect Scotch Creek and its tributaries include existing or newly constructed roads, timber harvest, or grazing. Sediment and stream temperature increases would be the most likely adverse impacts to water quality associated with these types of activities. A severe wildfire could also result in sediment increases to the stream system.

Management Actions

- Conduct stream/riparian survey to determine waterbody category, current channel and riparian conditions, and locations of unmapped waterbodies.
- Assess need for water/riparian monitoring based on stream/riparian survey results.
- Undertake restoration projects as needed to comply with the objectives of the Aquatic Conservation Strategy and to prevent further damage to hydrologic values.

Mining and Geothermal Resources

Mining and geothermal rights have been withdrawn within the Cascade-Siskiyou National Monument and are not an issue. There are no goals, objectives, issues, or actions necessary for this resource.

Cultural Resources

Agency Standards

Protect cultural resource values including information and significant sites for public and/or scientific use by present and future generations. Sites with significant values will be protected from management actions and from vandalism to the extent possible. Develop project plans to preserve, protect, and enhance archeological, historical and traditional use sites, and materials under the district's jurisdiction. This would include protection from wildfires (USDI 1995).

Goals

Protect cultural resources at Scotch Creek RNA from theft and human disturbance.

Current Information

No cultural resources have been recorded within the Scotch Creek RNA.

Issues

The isolated location of the RNA makes enforcement of restrictions and protection of archeological sites difficult.

Management Actions

- Conduct surveys for archeological values within the RNA.
- Protect sites as needed from management activities and vandalism.

Livestock Grazing

Agency Standards

"Watersheds are in, or are making significant progress toward, properly functioning physical condition, including their upland, riparian-wetland, and aquatic components; soil and plant conditions support infiltration, soil moisture storage and the release of water that are in balance with climate and land-form and maintain or improve water quality, water quantity and the timing and duration of flow….Habitats are, or are making significant progress toward being restored or maintained for federal threatened and endangered species, federal proposed, category 1 and 2 federal candidates (Federal Species of Concern), and other special status species." (Fundamentals of Rangeland Health, 43 CFR 4180)

"Habitats support healthy, productive and diverse populations and communities of native plants and animals (including special status species and species of local importance) appropriate to soil, climate, and landform." (Standard 5, Standards for Rangeland Health, USDI, 1997)

"Livestock grazing should be managed within RNAs to promote maintenance of the key characteristics for which the area is recognized." (USDI, 1987. BLM Manual, RNAs, 1623.37)

Goals

- Preserve natural features in as nearly an undisturbed state as possible for scientific and educational purposes. Natural processes should dominate, although deliberate manipulations which simulate natural processes are allowed in specific cases (USDI 1987).

- Maintain or improve the designated values of the RNA, especially native plant community composition and structure, soils, riparian areas, stream health and function, and nutrient cycling.
- Prevent spread of noxious and invasive weed species and control/eradicate existing populations.

Current Information

Grazing in the area encompassed by the Scotch Creek RNA dates back to the 1850s when large herds of cattle, horses, and sheep utilized the area. Control of these ranges did not occur until the passage of the Taylor Grazing Act in 1934. The long-term goal of this law was the improvement of range conditions and the stabilization of the western livestock industry. Prior to the enactment of the Taylor Grazing Act, unregulated grazing occurred. During this period rangeland resources and ecological conditions are reported to have suffered significant harm from overgrazing.

The Scotch Creek RNA is currently part of the Camp Creek Pasture of the Soda Mountain Allotment #10110. Cattle numbers on the Soda Mountain Allotment have been reduced by 34 percent since the 1970s. The current Animal Unit Months (AUMs) on the entire Soda Mountain Allotment are currently 1,794, with about 366 cattle on the allotment. Utilization in the area of the pasture encompassing Scotch Creek RNA is extremely light with only the very northern part of Scotch Creek RNA receiving any utilization. Much of the RNA is inaccessible to livestock because of dense rosaceous chaparral. No formal utilization plots currently occur in the RNA.

The Scotch Creek RNA contains significant areas of native grassland communities. In the RNA, large native herbivores (deer and elk) play an important evolutionary and ecological role. Even more important was the role played by now extinct large late Pleistocene herbivores. How these herbivores behaved should play an important role in how domestic livestock are used to obtain ecological objectives. Different grazing animals vary in their foraging preferences, season, duration, and intensity of use, which can have significantly different effects on plant communities, particularly when considering introduced versus non-introduced species. Grazing modifies vegetation height, frequency, and density; influences vegetation composition and succession; and, alters water retention and drainage characteristics. To plants, critical factors are the severity, frequency, duration, and seasonality of defoliation. These factors can be controlled through proper grazing management.

Livestock grazing could have a significant impact in the RNA if not managed in a manner appropriate for the particular plant community. Uncontrolled grazing by domestic livestock is not compatible with the maintenance of key RNA features; however, controlled grazing could offer an ecological management tool to maintain or improve some of the biological features (e.g., grassland component, noxious weeds) for which the RNA was established. Because of the topography and existing vegetation densities (rosaceous chaparral), much of the RNA is not currently utilized by grazing cattle.
Exotic and noxious weed populations do occur in the RNA, especially medusa head rye (*Taeniatherum caput-medusae*), cheatgrass (*Bromus tectorum*), and bulbous bluegrass (*Poa bulbosa*), and (*Centaurea solstitialis*) yellow star-thistle. Other weeds currently have overall low densities dyers woad (*Isatis tinctoria)*, bull thistle (*Cirsium vulgare*), yellow Alyssum *(Alyssum alyssoides*) and hedgehog dogtail (*Cynosurus echinatus*). Disturbance created by historic overgrazing grazing may have lead to weed introduction and expansion in the RNA, especially in the grasslands. Soil and vegetation disturbance from over-grazing can increase exotic plant densities and affect the plant communities for which the RNA was established. However, because of limited utilization within the RNA, current livestock grazing practices do not appear to be increasing noxious weeds within the Scotch Creek RNA. Livestock grazing could be utilized as a tool under an integrated weeds management plan to control noxious weeds within the RNA.

Issues

- Populations of Dyer's woad (*Isatis tinctoria)*, medusa-head rye (*Taeniatherum caput-medusae*), and yellow starthistle (*Centaurea solstitialis*) currently exist within the RNA. Soil disturbance from grazing in these areas could increase weed densities.

- Grazing leases are currently held for the area encompassed by the RNA. The terms and conditions in the existing permit will likely need to be modified to protect or maintain key elements in the RNA
- Current vegetation densities preclude grazing from much of the RNA. Future management actions (thinning/fire) intended to improve the condition of the vegetation, could result in more area being accessible to grazing cattle.
- No formal utilization plots exist in the RNA; install monitoring plots in utilized areas within Scotch Creek. No riparian surveys (see Hydrology section) have been done documenting the condition of the riparian vegetation.

Management Actions

- Collect data in grassland/scrubland/riparian communities within the RNA as part of the three-year grazing study within the monument. Baseline information has been collected.
- Until the completion of the grazing study, continue to allow the RNA to remain in the allotment management plan.
- Make recommendations on how to use grazing, if appropriate, as a tool to maintain or improve these communities.
- If needed, modify current grazing leases to change grazing patterns in the RNA so as to maintain or improve condition of key plant communities, or remove the RNA from the allotment plan.

Timber Management

Agency Standards

"Regulated timber harvest within the RNA and salvage removal of downed trees are not normally compatible with RNA values. For RNAs adjacent to timber harvest units, buffer zones should be considered in order to meet plan objectives." (USDI 1986)

Maintain viable ecosystem functions and protect RNA community cells from catastrophic disturbance events.

Current Information

Few trees have been removed in the past. The Schoheim Road, which runs along the current northern boundary of the RNA, resulted in removal of some trees. No private land is found next to the RNA since BLM acquired 160 acres of private land in Section 2. No commercial logging adjacent to the RNA will occur.

Timber harvesting in RNAs is not consistent with overall RNA management goals. However, non-merchantable sized trees less than 12" in diameter will be cut to reduce stand density and insect risk. Most of these will be Douglas-fir that are less than 90-years old, and which has established itself in the absence of fire. Occasionally, individual trees larger than this will be girdled and/or felled when competing directly with individual mature pine.

Management Actions Needed

No timber harvesting will occur in the RNA. Harvesting of small trees will only occur to support thinning/prescribed burning activities designed to maintain or protect forested communities from catastrophic events and to restore historic ecosystem processes. Trees that are felled or girdled for forest health reasons will be left on site. Small diameter Douglas-fir will be cut and burned in order to reduce fuel hazard and beetle outbreak risk.

Public Use/Recreation

Agency Standards

Recreation, camping, horse use, wood cutting, trapping, plant gathering, and off-highway vehicle (OHV) use are not compatible with the key RNA values unless shown not to hinder achievement of specific plan objectives. Hunting and fishing activities are typically permitted, but camping associated with these uses is prohibited in RNAs (see Wildlife sub-section below). Educational use such as class field studies is encouraged, but repetitive consumptive class activities are allowed only with BLM approval. Development of peripheral nature trails and interpretive signs may be appropriate in some cases, but with consideration for protection of the values without attracting undue attention. Public use roads, pipelines, communication sites, or power lines should avoid the RNA. Road closures or way closures or restrictions may be considered appropriate in some instances.(USDI 1986). Equestrian use is not specifically prohibited in the RNA policies; however, use is generally felt to not be compatible with the overall goal of RNAs to "Preserve natural features in as nearly an undisturbed state as possible for scientific and educational purposes. Natural processes should dominate, although deliberate manipulations which simulate natural processes are allowed in specific cases." (USDI 1986).

Goals

- Protect the designated values of the RNA. Prevent motorized and mechanized vehicles, and high impact recreation.
- Educate the public to the ecological significance of the RNA and the restrictions required to protect the designated natural resources.

Current Information

Recreational use in the Scotch Creek RNA is almost non-existent. There are no existing roads or trails within the RNA. The Schoheim Road is the northern boundary of the RNA and it is now closed to all vehicle use and will be decommissioned. The entire RNA is closed to all off-road travel by motorized and mechanized vehicles. Hiking from Porcupine Gap down Scotch Creek could become a major recreational hike, since hikers would have access to vehicles on public land without trespassing.

Potential problems arising from public use of the RNA include the threat of human-caused stand-replacement fire; damage to grasses, forbs and soils by compaction from hikers and horses; and the introduction of undesirable non-native species. Current recreational use is very light and low-impact. Periodic monitoring should be conducted to evaluate the impacts of recreational use on the protected plant communities and to determine if signs are necessary to protect against adverse effects.

Camping

Current Information

No established camping facilities exist in Scotch Creek RNA. Camping is not compatible with protection of the key elements of the RNA. However, unless camper use becomes evident, no actions are needed at the present time. If it does become a problem, "no camping" signs could be posted around the RNA.

Issues

- Isolated location of the RNA and difficulty in enforcing restrictions.
- Historical use of the area.

Management Actions

- Conduct periodic monitoring to determine if camping has occurred that has had a negative impact on the protected elements.
- Promote environmentally sensitive use of area to visitors via education (signs and personal contact).

Hiking

Current Information

There is an existing spur road between east and west forks of Scotch Creek but no designated trails within Scotch Creek RNA. Features of the RNA that might appeal to hikers are wild flowers, wild game, and diverse plant communities; however, the RNA is not well known or easily accessible to the general public. For these reasons, developing hiking trails or promoting the area as a recreational hiking destination would not be practical or recommended. Casual hiking itself does not pose a threat to the resources of the RNA. However, if done by a large number of people, native grasses and wild flowers could be trampled and destroyed and soils compacted, jeopardizing the integrity of the protected elements of the RNA.

Issues

- Isolated location of the RNA making enforcement of restrictions difficult.
- Historical use of the area.

Management Actions

- Conduct periodic monitoring to evaluate the extent and effects of hiker use.
- Promote environmentally sensitive use of area to visitors via education (signs and personal contact).

Equestrian

Current Information

Scotch Creek RNA currently receives little, if any, equestrian use. What use occurs is likely occasional use by riders under the grazing lease. Equestrian activities in this management plan refer to horses, llamas, mules, and other pack animals. Heavy use by recreational animals could threaten the values of the RNA by trampling vegetation and soil, particularly in meadows with thin, fragile soils; or by carrying in seeds of exotic weedy species on their hooves and hair, or in their feces. During wet conditions horses can push root crops (used by Native American tribes as food) too far into the soil to dig and use. For these reasons, horse and other pack or riding stock use is not considered compatible with the values in the RNA. Incidental use by riders moving cattle is allowed under the grazing leases.

Issues

- Isolation of area and difficulty in enforcing closures or restrictions.
- Historical use of the area.

Management Actions

- Periodically monitor the RNA to ensure that recreational horse or other stock use is not causing damage.
- Promote environmentally sensitive use of area to visitors via education (signs and personal contact with equestrian groups)
- Post signs at entrances to the RNA, stating the goals of the RNA.

Hunting, Fishing and Trapping

Agency Standards

Hunting and fishing are typically permitted, although not encouraged, in RNAs, whereas trapping is not permitted (USDI 1986).

Management of fish and wildlife populations is controlled by the Oregon Department of Fish and Wildlife (ODFW) with regulations for hunting, fishing, and trapping set on a yearly basis. Regulations regarding seasons, bag limits, stream stocking, licenses and techniques are dictated by the Department through the Fish and Wildlife Commission and are applicable on all lands within the state, including private property. Specific areas may be closed to activities in order to protect human life or natural resources.

Current Information

Wildlife is abundant in and around Scotch Creek RNA. The area contains big game like deer, black bear, and cougar. Elk may occasionally pass through the RNA. Small game species in the general area include Ruffed grouse (Bonasa umbellus), Blue Grouse (Dendragapus obscurus), Wild Turkey (Meleagris gallopavo), Mountain Quail (Oreortyx pictus), Valley Quail (Callipepla californicus), Western Grey squirrel (Sciurus griseus). Since there are no roads or trails, actual hunting within the RNA is extremely low. Most of Scotch creek contains no trout due to falls that act as a natural barrier preventing up stream migration. However, fish are present in the creek for the last two miles before Scotch Creek enters California. Scotch Creek doesn't support fish big enough or in big enough numbers to be of interest to anglers. Recreational fishing is nearly non-existent. It is unknown what, if any, trapping activity is occurring in this area. Fur-bearing species in the area include Bobcat (Felix rufus), Coyote (Canis latrans), Raccoon (Procyon lotor), and Grey fox (Urocyon cinereoargenteus), and possibly Pine Marten (Martes americanus). Due to the limited access, steep terrain, thick vegetation, relative scarcity of water and distance from town, this is probably not an area where extensive trapping has occurred recently. Since vehicular access to this area is no longer available, it is anticipated that any recent trapping activity in the area will no longer occur. There is no indication that any trapping currently occurs. Since there is only one spur road between east and west forks of Scotch Creek, and no trails within the RNA, hunting, fishing, and trapping in Scotch Creek RNA is not likely an issue.

Issues

- Dispersed camping and OHV or horse use are often associated with hunting and could negatively impact RNA resources if these activities occur illegally.
- The isolation of the area makes enforcing restrictions difficult.
- Historical use of the area.
- Prohibition of hunting and trapping in the RNA would require a change to the Oregon State Game Regulations and would be difficult to enforce.
- Minimal impact to wildlife populations in the area. No impact is anticipated on the values for which the RNA was designated.

Management Actions

Monitor use to determine if any impacts from hunting are occurring.

Off-Highway Vehicles

Agency Standards

Management directions for all RNAs specify closure to off-highway vehicle (OHV) use. Off-highway vehicles include, but are not limited to, motorcycles, all-terrain vehicles, and mountain bikes.

Current Information

Because of the dense vegetation, lack of roads, remote location, and limited access, there has been no noticeable OHV activity within this RNA. In the past OHV use occurred on high open grassy slopes below Schoheim Road along the lower end of Lone Pine Ridge to the California Border.

Issues

- Isolated location makes enforcing restrictions or area closures difficult.
- Historical use of the area.

Management Actions

- Conduct periodic monitoring to assess off-highway vehicle violations.
- Promote environmentally sensitive use of area to visitors via education (signs and personal contact).

Special Forest Products

Policy and Agency Standards

Commercial or personal harvest of Special Forest Products (SFPs) within RNAs, such as boughs, burls, fungi, medicinal plants, etc., are not compatible with the overall goals to "Preserve natural features in as nearly an undisturbed state as possible for scientific and educational purposes. Natural processes should dominate, although deliberate manipulations which simulate natural processes are allowed in specific cases (USDI 1987).

Current Information

No use permits are currently issued for this area. Historical personal use within this area is not well documented. Little information is available to determine the abundance of SFPs within the RNA, although numerous plants used in the medicinal herb industry are present. The lack of access to the RNA would limit the removal of any significant quantities of SFPs. Future research within the RNA may require the collection of certain animal and plant specimens.

Issues

The isolation of the area makes enforcing SFPs collection restrictions difficult.

Management Action

- Prohibit any commercial or person use collection of Special Forest Products within the RNA. Permits for collection of specimens for research will be allowed on a case by case basis.
- Educate the public to the ecological significance of the RNA and the restrictions required to protect the designated natural resources.

Interpretation and Research

Policy and Agency Standards

The purpose for RNAs is for research, observation, and study. Studies involving manipulations of environmental or vegetation characteristics or plant harvest must have prior approval of the BLM.

Goals

- Protect the designated values for which the RNA was nominated to provide baseline information against which the effects of human activities in other areas may be compared.
- Provide a site for study of natural processes in as undisturbed (by human activities) an ecosystem as possible.

Current Information

Scotch Creek RNA is only accessible on foot or horseback, which protects it from overuse by the public but also makes it impractical as an interpretive or educational site. The RNA is accessible all year via the Horseshoe Ranch Wildlife Area (California). It can be used by investigators and classes willing to walk the several miles to the RNA. One of the main objectives for RNAs is to provide educational and research areas for ecological and environmental studies. The following specific research topics have been suggested for Scotch Creek:

- Evaluating the effects and the role of domestic livestock grazing on key elements in the RNA (plant communities and rare species) as part of the ongoing grazing study.
- The role of fire in plant community development, composition and production.

Other potential areas for research include the effectiveness of prescribed fire and seeding of native species in reducing non-native plant species, and studies of the effects of prescribed fire or vegetative manipulation on plant community composition or special status plant populations. BLM encourages any nondestructive research that leads to a further understand of RNA ecosystems and is not limited to restoration or the study of politically signification plants and animals.

When researchers plan to use an area, they have certain obligations to:

1. notify the appropriate BLM field office, submit a research plan, and obtain permission;
2. abide by regulations and management prescriptions applicable to the natural area; and,
3. inform the agency of the research progress, published results, and disposition of collected materials.

Issues

- Lack of funding for treatments in RNAs
- Impacts from surrounding land use activities.

Management Actions

- Evaluate all proposed research projects and approve only those that will not adversely affect the RNA's resources or short- and long-term viability of species.
- Maintain a list of projects and research in the RNA, including findings and conclusions.
- Incorporate pertinent new findings from research projects into management actions.
- Maintain copies of all surveys, inventories, monitoring and activities conducted within the RNA.

MONITORING

Definition and Role of Monitoring

Monitoring is defined as a process of repeated recording or sampling of similar information for comparison to a reference. The role of monitoring in Research Natural Areas (RNA) is to collect information in order to evaluate if objectives and anticipated or assumed results of a management plan and management actions are being realized or if implementation is proceeding as planned. Because monitoring may be so costly as to be prohibitive, priority should be given to monitoring mandated by legislation and to focusing on management actions aimed at maintaining, protecting and restoring key elements and minimizing disturbance in the RNA. All monitoring activities must include the following steps:

1. Establish monitoring objectives.
2. Collect baseline information.
3. Repeat consistent standardized monitoring procedures over time.
4. Interpret monitoring results relative to the baseline information and monitoring and implementation objectives.
5. Modify management objective actions and monitoring procedures as necessary based on reliable monitoring data to continue to achieve goals of the RNA.

The monitoring plan should be tailored to the unique characteristics of the RNA. Two types of monitoring activities are outlined below. Ecological status monitoring is designed to track the ecological condition of the natural elements protected within the RNA. Defensibility monitoring should detect impacts from outside factors on the protected elements in the RNA. These monitoring activities are general in nature and should not be used in lieu of more complex research strategies. Detailed monitoring protocols should also be developed in conjunction with specific management projects to measure their effectiveness in achieving RNA objectives. For each element, monitoring objectives, unit and frequency of measurement, responsible personnel, and location for data storage are stated. Monitoring is also dependent on annual fluctuations of funding.

Ecological Status Monitoring

Ecological status monitoring involves tracking species and plant communities relative to the stated objectives of the RNA. Ecological status monitoring at Scotch Creek RNA should assess the current status of RNA elements and track trends or changes over time to determine if any RNA values are at risk. Monitoring results provide the basis for evaluating the effectiveness of management actions and determining if changes are required. Where possible, monitoring within the RNA should be tiered to the monitoring for the Cascade-Siskiyou National Monument.

Element: Plant Associations

Monitoring Objectives: Track successional changes in the key RNA plant associations or communities to determine if native species are protected, if ecological processes are properly functioning, and if RNA management actions are achieving desired outcomes. Information collected during monitoring provides the basis for making adjustments to management actions.

Frequency of Measurement: Every 5 years and after any management action.

Responsible Personnel: Botanists, Ecologists, Foresters

Data Storage: Scotch Creek RNA File

Element: Special Status Plants

Monitoring Objectives: Monitor populations of special status plants that were documented in surveys done in 1999, in order to maintain or enhance populations and associated habitats. Utilize the RNA to collect base-line biological data for rare plant species. Evaluate effects from any vegetation treatments (burning/thinning) and grazing.

Unit of Measure: Revisit known sites and record population demographics on site reports. Include monitoring of for the rare *Astragalus californica.*

Frequency of Measurement: Revisit known sites of special status plants every 5 years.

Responsible Personnel: Botanist

Data Storage: Scotch Creek RNA File, Medford Rare Plant Database

Element: Special Status Wildlife

Monitoring Objectives: Perform surveys for special status wildlife species and monitor species within the RNA in order to maintain or enhance populations.

Unit of Measure: Determined by established protocols for specific species.

Frequency of Measurement: According to established protocols.

Responsible Personnel: Wildlife Biologist

Data Storage: Scotch Creek RNA File, Wildlife database

Element: Fire

Monitoring Objectives: Determine the need to restored key plant communities using prescribed fire. Perform fuel surveys in key plant communities following established protocols. Monitor following prescribed burning results and the plant community response, in conjunction with Plant association monitoring .

Unit of Measure: Determined by established wildland burning and vegetation protocols.

Frequency of Measurement: According to established protocols.

Responsible Personnel: Fire specialists, Ecologist, Botanist

Data Storage: Scotch Creek RNA File, Fire database

Element: Non-Native Species

Monitoring Objectives: Assess the need for management actions to reduce or minimize the impact, introduction and/or spread of non-native weedy species. Monitor identified treatment and problem areas. Non-native species of concern include all currently identified noxious and exotic weeds known within the monument and in the adjacent watersheds.

Unit of Measure: Presence/absence, abundance and spread. Treatment results of non-native weedy species by fixed plots. Target highly susceptible points of invasion (along borders and roads), susceptible habitats, and areas that receive vegetation treatments.

Frequency of Measurement: Monitor treatment plots for 2 years following the treatment. Demographic monitoring every 3 years (presence/spread); casual observations during other site visits.

Responsible Personnel: Botanists, Range Specialists, Ecologists

Data Storage: Scotch Creek RNA File, Medford District Noxious Weed Database

Element: Insects, Diseases or Pests

Monitoring Objectives: Monitor harmful insects, diseases or pests that could cause long-term negative changes in plant communities, especially the Mixed conifer/California black oak community. Monitoring for the presence of the oak phytophthora. Determine if treatments are needed to reduce the negative effects of insects and diseases.

Unit of Measure: Periodic evaluation of the RNA to discover presence/absence and extent of harmful insects, diseases or pests. Initial evaluations may be accomplished by walking through the RNA, or through photo interpretation.

Frequency of Measurement: Every 5 years or as needed based on casual observations during other site visits.

Responsible Personnel: Foresters, Ecologists, Entomologists, Pathologists, Botanists

Data Storage: Scotch Creek RNA File, Southwest Oregon Insect and Disease Center

Element: Hydrology

Monitoring Objectives: Evaluate hydrological conditions (channel stability, erosion, sedimentation, slumping potential, etc.) and riparian vegetation of all streams to determine the functioning condition and need for habitat improvement or restoration activities.

Unit of Measure: Established riparian stream survey protocols.

Frequency of Measurement: Establish a baseline, then every 10 years.

Responsible Personnel: Hydrologist / Riparian Coordinator

Data Storage: Scotch Creek RNA File, Riparian Database

Element: Natural Disturbance

Monitoring Objectives: Document type, extent, intensity, and frequency of natural disturbances in the RNA and resulting changes in ecosystem structure or composition.

Unit of Measurement: Intuitively controlled surveys after disturbance, photos of affected plant communities or areas.

Frequency of Measurement: After significant disturbance, wildfires, landslides, insect and disease outbreaks

Responsible Personnel: Botanist, Ecologist and Foresters

Data Storage: Scotch Creek RNA File

Defensibility Monitoring

Defensibility monitoring involves on-the-ground assessment of factors which affect the manager's ability to protect the Scotch Creek Research Natural Area and its elements. Considered are current and anticipated land uses within and adjacent to the RNA and their potential negative effects on the protected elements or their governing ecological processes. Defensibility monitoring also involves checking for evidence of prohibited use, encroachment or degradation within the RNA.

Element: Cultural Resources

Monitoring Objectives: After initial baseline surveys, detect vandalism or disturbance to known archeological or historical sites at the RNA.

Unit of Measure: Visual assessment to detect evidence of disturbance.

Frequency of Measurement: Every 5 years or as needed based on observations during periodic site visits.

Responsible Personnel: Cultural Resource Manager/ Archaeologist

Data Storage: Scotch Creek RNA File, District Archeology files

Element: Public Use of RNA

(camping, hiking, equestrian, trapping, OHV, special forest products, interpretation and research, trespass livestock grazing, timber harvesting)

Element Objectives: Determine if the level of public use jeopardizes protection of RNA values or key elements.

Unit of Measure: Observations made during other surveys or during periodic site visits. Indications of problem areas include evidence of vehicular use (on or off existing roads in the RNA), refuse, signs of campfires or campsites, trampled meadows, over grazing, significant erosion or rutting on or off roads. If problems are noted during casual visits to the site, conduct more extensive surveys to determine if actions should be taken to prevent damage to the protected elements.

Frequency Measurement:_ Casual visits yearly.

Responsible Personnel: RNA Coordinator

Data Storage: Scotch Creek RNA file

Element: Roads

Element Objectives: Determine condition of Schoheim road, track erosion and gullying of road surfaces, or other problems associated with the closed road.

Unit of Measurement: Subjective evaluation by knowledgeable personnel. Establishment of photo-points of marginal spots to compare condition over time.

Frequency of Measurement: Every 5 years during periodic site-evaluation visits to the RNA.

Responsible Personnel: RNA Coordinator, Road Engineers

Data Storage: Scotch Creek RNA file

Element: Fences and Gates

Monitoring Objectives: Determine if existing fences and gates adequately protect the RNAs elements. If not, determine if repairs, additional fencing or gates are needed.

Unit of Measurement: Walk fence lines to discover broken fences.

Frequency of Measurement: Every 5 years, or as needed if trespass grazing from California or any OHV use is observed during other visits to the site.

Responsible Personnel: Rangeland Specialists, Road Engineers

Data Storage: Scotch Creek RNA file

Element: Grazing

Element Objectives: Determine if permitted grazing is maintaining or enhancing key plant community elements within the RNA, including Special Status Plants. Meet the intent of the overall goals for the RNA. Adjust grazing accordingly.

Unit of Measurement: Establishment of monitoring plots following standardized protocols in livestock utilized plant communities (grasslands / riparian) within the RNA. Where possible monitor grazing in conjunction with plant community and Special Status plant monitoring plots. Establish photo-points in areas of concern to compare condition over time.

Frequency of Measurement: Monitor for a minimum of three years as part of the monument grazing study. Monitor utilization transects every year that livestock use the RNA.

Responsible Personnel: Ecologists, Range Specialists, Botanists

Data Storage: Scotch Creek RNA file

RECOMMENDATIONS FOR FUTURE RESEARCH

None at this time.

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APPENDIX M

Oregon Gulch Research Natural Area

Management Plan
for
Oregon Gulch Research Natural Area

Ashland Resource Area
Medford District
Bureau of Land Management
United States Department of the Interior

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INTRODUCTION

Research Natural Areas (RNAs) are part of a federal system of land tracts identified and designated to preserve and protect certain natural features for research and educational purposes. The overall goals for establishing RNAs are to provide:

1. baseline areas against which the effects of human activities can be measured;
2. sites for study of natural processes in an undisturbed ecosystem; and
3. a gene pool for all types of organisms, especially rare and endangered species.

The interagency Pacific Northwest Research Natural Area Committee, composed of federal, state and private organizations in Oregon and Washington, has identified a set of natural elements, or "cells", representing terrestrial and aquatic habitats, plant communities, and ecosystem processes targeted for protection through the RNA system.

The 1,056 acre (427.4 ha) Oregon Gulch RNA is located in southeastern Jackson County, Oregon, between Randcore Pass on the west and the former Box O Ranch (BLM) at the east, and is bound on the north by the ridge from the Pass to Rosebud Mountain and on the south by the ridge that separates Oregon Gulch from Agate Flat. Oregon Gulch enters Jenny Creek on the former Box O Ranch.

The area was originally nominated by the Nature Conservancy in 1990, analyzed and evaluated by the RMP process in 1992 by the Ashland Resource Area, BLM, proposed as a new RNA in the Medford District Proposed Resource Management Plan/Environmental Impact Statement (USDI 1994), and designated a new RNA under the Record of Decision and Resource Management Plan (USDI 1995a). One of the management actions required by the ROD for Special Areas, including RNAs, is development of site-specific management plans. Research Natural Area Management Policy requires development of a management plan that establishes operational objectives to maintain or enhance the unique values of the designated RNA. In addition to operational objectives, a monitoring strategy should be developed to evaluate progress made toward meeting resource management objectives. These requirements establish the basis for preparation of this draft management plan.

POLICY

The documents and policy of authority now guiding decisions for RNAs are in Appendix R of the Cascade-Siskiyou National Monument (CSNM) Draft Resource Management Plan. Management objectives for RNAs addressed in the plan include the following directives:

- Preserve, protect, or restore native species composition and ecological processes of biological communities (including Oregon Natural Heritage Plan terrestrial or aquatic cells) in research natural areas. These areas will be available for short- or long-term scientific study, research, and education and will serve as a baseline against which human impacts on natural systems can be measured.
- Ideally, RNAs should be undisturbed by human impacts; however, because pristine examples of significant ecosystems may not exist, the least altered sites should be selected. They should be sufficiently large to protect key features from significant impacts judged inappropriate for the area and natural processes should be allowed to dominate. The guiding principal of RNAs is to allow natural, ecological, and physical processes to predominate, while preventing human-induced encroachments and activities that directly or indirectly modify ecological processes in the area. Active management should be undertaken where natural processes have been interrupted (PNW 1991).

BASIS FOR DEDICATION AND SETTING OBJECTIVES

RNA History

The Nature Conservancy, under contract with the BLM State Office, nominated Oregon Gulch as an RNA on August 10, 1990 (Schaaf 1990). The RNA filled Cell 7, a Rogue Valley mixed conifer forest (Douglas-fir probably dominant) and Cell 27, a Rogue Valley Manzanita-wedgeleaf ceanothus/bunchgrass chaparral as designated in the 1988 Oregon Natural Heritage Plan (Oregon Natural Heritage Advisory Council 1988). The plan (Oregon Natural Heritage Advisory Council 1998) now indicates that Oregon Gulch RNA fills Cell 18, Douglas-fir/ponderosa pine forest with a poison oak, hairy snowberry, or Piper Oregon grape understory, and Cell 37, a white fir moderately dry site forest, with baldhip rose, hairy snowberry, and star flower understory. The plan lists Cell 53 (1988 Cell 27) Manzanita-wedgeleaf ceanothus/bunchgrass as unfilled.

The area was analyzed and evaluated by the RMP process in 1992 by the Ashland Resource Area, BLM, was proposed as a new RNA in the Medford District Proposed Resource Management Plan/ Environmental Impact Statement (USDI 1994), and was designated as a new RNA under the Record of Decision (ROD) and Resource Management Plan (USDI 1995a). One of the management actions required by the ROD for Special Areas, including RNAs, is development of site-specific management plans. Oregon Gulch RNA has been under interim management requirements since August 11, 1992, as the RNA is now a part of the Cascade-Siskiyou National Monument.

Basis for Dedication

Oregon Gulch was nominated as an RNA because it represents two RNA cell needs for a mixed conifer forest dominated by Douglas-fir and ponderosa pine with large scattered sugar pine and incense cedar also prominent in the over-story, and a manzanita-wedgeleaf ceanothus/bunchgrass chaparral at the eastern boundary of the Klamath River Ridges of the Klamath Mountains Ecoregion. The area was selected for its natural values and its accessibility. It also includes several rare species: Greene's mariposa lily (*Calochortus greenei*), Howell's false-caraway (*Perideridia howellii*), and Bellinger's meadow-foam (*Limnanthes bellingeriana*).

Management Restrictions

The Medford District RMP (USDI 1995a) established the following management requirements on the Oregon Gulch RNA. The RNA is not available for timber harvest and was closed to Off-highway vehicles (OHV) use and mineral entry. Minerals leasing was subject to no surface occupancy (NSO).

The presidential proclamation (Appendix A) withdraws lands within the monument from mineral location, entry, and patent and mineral and geothermal leasing; prohibits commercial harvest of timber or other vegetative material except for restoration purposes; prohibits unauthorized OHV use; but permits continued grazing within the monument until completion of a study of grazing impacts on natural ecosystem dynamics.

NATURAL AREA DESCRIPTION

Oregon Gulch Area Description

Location

The 1,056 acre Oregon Gulch RNA is located in southeastern Jackson County, Oregon (T.40S.,R.04E., Secs.29, 30 NE1/4NE1/4, 19 S1/2, 20 S1/2SE1/4, 32 N1/2N1/2) along the slopes and bottom of Oregon Gulch in the Jenny Creek Watershed, a part of the Klamath River Basin (map 2) in the eastern portion of the Cascade-Siskiyou National Monument. The RNA begins at Randcore Pass and extends southeast to what was formerly designated as the Box O Ranch. It is located in the eastern portion of the Cascade-Siskiyou Ecological National Monument. The RNA is approximately 18 air miles southeast of Ashland, Oregon.

Access

Two public points of entry to Oregon Gulch RNA are:

1. by vehicle from the northwest via Oregon Route 66 to BLM Mill Creek Road 40-3E-12.0 to the Lincoln Creek Road 40-3E-12.1 to Randcore Pass; and
2. by foot from the southeast from the Box O Ranch via Route 66, the Copco Rd and a short unnamed road to the west at Mile 5.2/

The Box O entry requires fording Jenny Creek. Public vehicle access is possible only via the Mill Creek Road and Randcore Pass. Access is seasonal due to snow depth at Randcore Pass and water depth at Jenny Creek. Roads are surfaced and maintained to Randcore Pass as is the private Copco Road to the Box O turn-off. The roads down to the former Box O Ranch and below Randcore Pass and within the RNA are unsurfaced and closed to unauthorized or public vehicle use.

Ecoregions

Ecoregions are defined by a number of factors that include physiography (including elevation and local relief); geology (surficial material and bedrock); soil (order, common soil series, temperature and moisture regimes); climate (mean annual precipitation, mean annual frost-free days, mean January and July min/max temperature); potential natural vegetation; land use (recreation, forestry, watershed); and land cover (present vegetation).

Oregon Gulch RNA lies at the east end of the Klamath River Ridges Ecoregion at its confluence with the Southern Cascades Slope Ecoregion. Because of environmental variation, particularly where ecoregions meet, generalized descriptive statements do not always apply. An area such as Oregon Gulch RNA some of the elements of adjacent ecoregions apply. The following synopsis of the ecoregions associated with Oregon Gulch RNA is based on Pater (1997a, 1997b).

78g Klamath River Ridges (3,800 - 7,000 ft.)

The Klamath River Ridges Ecoregion has a dry continental climate and receives, on average, 25 to 35 inches of annual precipitation. Low elevation and south-facing slopes have more drought resistant vegetation than elsewhere in the Klamath Ecoregion (78), such as juniper, chaparral, and ponderosa pine. Higher and north-facing ridges are covered by Douglas-fir (*Pseudotsuga menziesii*), white fir (*Abies concolor*). Ecoregion 78g has less precipitation, more sunny days, and a greater number of cold clear nights than the Inland Siskiyou Ecoregion (78e) to the west.

9i Southern Cascade Slope (3,600 - 6,300 ft.)

The Southern Cascades Slope ecoregion is a transitional zone between the Cascades (4) and the drier Eastern Cascades Slopes and Foothills (9). Forests of ponderosa pine blanket the mountainous landscape; white fir (*Abies concolor*), and Douglas-fir (*Pseudotsuga menziesii*) grow at higher elevations. Shasta red fir (*Abies procera* var. *shastensis*) is absent from the Oregon Gulch RNA. Much of Ecoregion 9i typically receives more precipitation than other Level IV Eastern Cascades Slopes and Foothills Ecoregions.

Climate

No climatic data has been collected at Oregon Gulch RNA. The RNA lies within the influence of the continental climate of the Great Basin and the more moderate, wetter, oceanic influences to the west. Summers are usually long and dry (most of the precipitation falls between November and March), with occasional wet or dry thunderstorms. Winters are probably drier and colder than areas to the west because of the Great Basin influence. Based on isohyetal maps average annual precipitation probably varies from 25 inches at higher elevations to 20 inches at Jenny Creek. Precipitation during the winter months occurs as rain or snow. The transient snow zone lies between 3,000 to 4,200 feet elevation (USDI 1995b). The closest National Oceanic and Atmospheric Administration (NOAA) weather station with air temperature is found at Howard Prairie Dam (elevation 4,568 ft.) which is approximately 10 miles north of the RNA. Average monthly maximum, minimum, and mean air temperatures for the Howard Prairie Dam NOAA weather station are shown in Table M-1.

Table M-1. Average Monthly Maximum, Minimum, and Mean Air Temperatures at Howard Prairie Dam

	Air Temperature (°F)												
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Yr
Max	37.5	42.4	45.9	52.2	61.0	70.2	78.6	78.4	71.6	60.7	43.7	36.5	56.5
Min	18.9	21.1	23.8	27.5	33.1	40.0	43.6	43.2	37.7	32.3	26.7	21.1	30.7
Mean	28.2	31.8	34.8	39.8	47.1	55.1	61.1	60.8	54.7	46.5	35.2	28.8	43.6

Source: NOAA Station (1961-1990). Oregon Climate Service 2000

Topography

The northwest/southeast valley formed by Oregon Gulch lies between Keene Creek Ridge to the south and the divide between the Oregon Gulch/Rosebud Mountain Ridge and Keene Creek to the north. The valley bottom is at 4,400 ft. elevation at Randcore Pass and 3,240 ft. elevation at the eastern boundary. Elevations along the north ridge line are from 4,466 ft. elevation northeast of Randcore Pass to 4,386 ft. at Rosebud Mountain. Elevations along Keene Creek Ridge to the south range from 4,119 ft. elev. to 4,200 ft. elev. The lower elevations are characterized by open rocky exposures and bench grasslands interspersed with oak/conifer forests. Special topographic features include steep rocky bluffs below Rosebud Helipond; flat, grassy benches with decreased drainage between forested areas on the south-facing slopes; and exposed, bare scabland hummocks.

Geology

Oregon Gulch RNA is made up of Miocene and Oligocene Western Cascade volcanic, pyroclastic, volcanoclastic, and sedimentary rocks (Smith, et al. 1982). Oregon Gulch is on the south edge of a fairly complex geological island surrounded by vast areas mapped as Western Cascade Oligocene basalt, basaltic andesite, and andesite (Tb2) on the west and southwest and Pliocene and Upper Miocene basaltic andesite flows (Tba) of the High Cascades Range to the east.

The Western Cascade Oligocene flows are interbedded with volcanic breccias, pyroclastic deposits and other rock types too thin, discontinuous, or poorly exposed to map separately (Smith, et al. 1982). The Pliocene and Upper Miocene basaltic andesite flow (Tba) commonly is a fine-grained , high-alumina olivine. Except for a few small exposures, Oregon Gulch is separated from the larger, canyon filling flow by Jenny Creek.

Four mapped formations are found in Oregon Gulch RNA. With the exception of a slender northeast trending exposure Oligocene intermediate and silicic ash-flow tuff (Ti2, Unit 2) the south half of 40S04E29 is Western Cascade Oligocene basalt, basaltic andesite, and andesite (Tb2). To the north, the RNA is mapped as coarse-grained Miocene pyroclastic, volcaniclastic, and sedimentary rocks (Tc4). Between the two units is an east-west band of Miocene and Oligocene salicic ash-flow tuff (Ti3, Unit 3).

The different rock types in these formations are not mapped because of the scale of the map and the complexity of the formations.

Soils

Soil information for Oregon Gulch RNA is based on Soil Survey of Jackson County Area, Oregon (USDA 1993). There are eight mapped general soil units in the RNA. Because of the small scale of the map and the large area covered, mapped units are often presented as complexes of different soil types. Number of acres, percent of RNA, productivity class and site index (if any) of the soil types found in the RNA are summarized in Table M-2. About 60 percent of the RNA consists of rock outcrop soil complexes. The balance (40 percent) is soil types capable of supporting mixed conifer stands.

Table M-2. Oregon Gulch RNA Soil Units (USDA 1993)

Unit #	Unit Name	Percent Slope	Acres	Percent Acres	Productivity Class[1]	Site Index[2]
19E	Bybee-Tatouche complex	12 to 35	6	0.58	PSME[3] 8, 8	85, 90
113E	McMullin-Rock outcrop complex	3 to 35	78	7.48	-	-
113G	McMullin-Rock outcrop complex	35 to 60	46	4.41	-	-
114E	McNull loam, south slopes	12 to 35	310	29.72	PSME 7	80
115E	McNull gravelly loam, south slopes	12 to 35	9	0.86	PSME 6	70
116E	McNull-McMullin gravelly loam, south slopes	12 to 35	48	4.60	PSME 6	70
116G	McNull-McMullin gravelly loam, south slopes	35 to 60	17	1.63	PSME 6	70
117G	McNull-McMullin complex, north slopes	35 to 60	13	1.25	PSME 7	80
119F	McNull-Medco complex	1 to 12	9	.86	PSME 7	70, 65
170C	Skookum very cobbly loam	1 - 20	2	.19	-	-
173D	Skookum-Rock outcrop-McMullin complex,	1 to 20	40	3.84	-	-
173F	Skookum-Rock outcrop-McMullin complex	20 to 50	465	44.58	-	-

[1] Productivity Class. Yield in cubic meters per hectare per year calculated at the age of culmination of mean annual increment for fully stocked natural stands.

[2] Site Index (SI). Height and age of selected trees in stands of a given species. A designation of the quality of a forest site based on the height of the dominant stand at an arbitrarily chosen age. Average height at 50 yrs=75 feet. SI is 75. Age varies with species and soil type: 100 yrs. PSME on Pokegama and Woodcock units, PIPO all units; 50 yrs. PSME on all other units, ABMASH, and ABCO.

[3] PSME. *Pseudotsuga menziesii*, Douglas-fir.

Hydrology

The Oregon Gulch RNA lies within the 2,000 acre Oregon Gulch drainage area and comprises 52 percent of the drainage area. Oregon Gulch flows from its headwaters in the wetlands at Randcore Pass just outside the established RNA boundary, in a southeasterly direction for approximately 2.7 miles until it joins Jenny Creek on the former Box O Ranch. Water is contributed to the stream from springs and seeps along its course. There are two unnamed springs marked on the USGS 7.5 Soda Mountain Quadrant and one on the Parker Mountain Quadrant, below Rosebud Mountain (42.03.58W, 122.22.25N). Of the two springs on the Soda Mountain Quad, one (42.04.09N, 122.23.53W) is just outside the RNA boundary to the southwest. The other spring (42.03.57N, 122.22.36W) is just below the Rosebud Helipond. Rosebud Spring just north of the Rosebud Helipond on the south-facing slopes of the Oregon Gulch/Keene Creek ridge is not shown on the USGS maps. Miller (1999) observed three springs in the RNA (one shown on the USGS Quad and two others) that maintained flowing water throughout the summer.

Oregon Gulch is an intermittent stream that dries up as early as mid-May or not until July, but typically by the second week of June, depending on the distribution and amount of rain in any given year. Parker (1999) and Miller (1999) both reported small pools of water in Oregon Gulch in the summer of 1999. Oregon Gulch passes through several reaches of narrow, steep-walled rocky canyons (Miller 1999). The bedrock substrate allows pools to form and remain filled after reaches upstream and downstream of the canyon sections have dried up. The narrow canyon and dense riparian vegetation protect the pools from evaporation. Oregon Gulch is classified as a Rosgen type A stream (Rosgen 1996) through the RNA. This section of the stream is entrenched and confined.

The lower reach of Oregon Gulch flows through an alluvial fan into Jenny Creek. The channel in this reach is deeply entrenched (Rosgen type G), with evidence of stream straightening and bank riprap. Remnant riparian vegetation is very sparse. Aerial photos from 1939 and the early 1960s show substantially larger riparian vegetation, with little evidence of channel entrenchment. Aerial photos for 1966 show evidence of channel change from the 1964 flood, including new deposits of gravel and reductions in vegetation (USDI 2000).

There is little data concerning streamflows and water quality for Oregon Gulch. Water temperature data were collected in late June and early July, 1998 (an unusually high water year) at two sites in Oregon Gulch, at the former Box O Ranch/RNA border (17 days), and downstream near the Jenny Creek confluence (14 days). The number of days at each site reflects the number of days that the temperature recorders operated prior to the stream drying up. At the former Box O Ranch west boundary site the 7-day average daily temperature was 76.8˚F (max 80.1˚F - min 58.2˚ F). At the Jenny Creek confluence site the 7-day average daily temperature was 76.0˚F (max 77.9˚F - min 52.8˚F).

The Jenny Creek Watershed Assessment and Analysis (USDI 1995b) states that poor road location has created major problems for Oregon Gulch; however, no specific concerns are identified. In 1999, road restoration work occurred on the Rosebud road (40-3E-19.0, 19.1) on BLM lands, stabilizing this portion of the road. The eastern portion of the 40-3E-19.1 road toward the Rosebud helipond is on private lands and sediment from this road could be a concern for Oregon Gulch and its tributaries.

Vegetation

Miller (1999) recognized five major plant communities in her mid-summer vegetation reconnaissance of Oregon Gulch RNA:

1. Garry Oak/Wedgeleaf ceanothus grass or scrubland
2. Western Juniper/Garry Oak scrubland
3. Garry Oak/Ponderosa Pine forest
4. Mixed Conifer/California Black Oak forest
5. Riparian

Riparian species were found along Oregon Gulch and some of the tributaries. Miller did not describe the manzanita-wedgeleaf ceanothus /bunchgrass chaparral community described in the nomination document (USDI 1989); the occurrence of this community type was an error in the original RNA nomination. Manzanita communities are not documented to occur in the RNA.

Garry Oak/Wedgeleaf ceanothus grass or scrubland

The balance between Garry oak and wedgeleaf ceanothus cover varies widely in this community in a mosaic that includes relatively flat wet meadows. Miller (1999) found the community covered wide stretches of land following a more or less homogenous slope and aspect. Garry oak frequently formed a dense canopy with few other tree species, although occasional ponderosa pine, western juniper, California black oak, and Douglas-fir are scattered in the community. The percent cover of shrubs is usually greater than the tree coverage. The shrub layer often consists of Garry oak sprouted from the base of older trees although wedgeleaf ceanothus usually dominates. Other shrubs, serviceberry (*Amelanchier alnifolia*), mountain mahogany (*Cercocarpus betuloides*), and hazelnut (*Corylus cornuta* var. *californica*) are common. Grasses include the nearly ubiquitous bulbous bluegrass (*Poa bulbosa*) and medusahead (*Taeniatherum caput-medusae*) and natives such as, Idaho, western and California fescue (*Festuca idahoensis, F. occidentalis, F. californica,* respectively), and California oatgrass (*Danthonia californica*). Forbs vary from relative xeric species associated with the oaks and wedgeleaf ceanothus like balsam-root, *Balsamorhiza deltoidea*; wooly sunflower, *Eriophyllum lanatum*; *Lomatium macrocarpum*) to seasonally wet meadow species (heal-all, *Prunella vulgaris*; death camas, *Zigadenus venenosus*).

Western Juniper/Garry Oak scrubland

This community is found on the driest sites. Western juniper is the dominant tree with a few ponderosa pine and Garry oak. Tree coverage is less than 10 percent. Shrub cover varies between 15 to 60 percent with considerable bare rock. Rabbitbrush (*Chrysothamnus nauseous*) is the most significant shrub, although wedgeleaf ceanothus (*Ceanothus cuneatus*) may dominate in some areas. The herbaceous layer is sparse, dominated by annual grasses [medusa-head rye, (*Taeniatherum caput-medusa*); nodding brome, (*Bromus tectorum*)] and the perennial alien grass, bulbous bluegrass (*Poa bulbosa*). Forbs include scattered wild buckwheats (*Eriogonum spp.*) and biscuitroots (*Lomatium spp.*).

Garry Oak/Ponderosa Pine forest

This community consists primarily of Garry oak with greater diversity of conifers, particularly ponderosa pine than the tree composition in the Garry oak/wedgeleaf ceanothus community. Other common conifers include Douglas-fir, incense cedar, and sugar pine. Shrubs include wedgeleaf ceanothus, tall Oregon-grape (*Berberis aquifolium*), mountain mahogany (*Cercocarpus betuloides*), snowberry (*Symphoricarpos mollis*) and serviceberry (*Amelanchier alnifolia*). Grasses include aliens; bulbous bluegrass (*Poa bulbosa*), medusa-head rye (*Taeniatherum caput-medusae*), and hedgehog dogtail (*Cynosurus echinatus*); and natives; Idaho fescue (*Festuca idahoensis*), California oatgrass (*Danthonia californica*). Forbs include larkspur (*Delphinium menziesii*), strawberry (*Fragaria vesca*), arnica (*Arnica latifolia*), sweet-cicely (*Osmorhiza chilensis*), and yarrow (*Achillea millefolium*).

Mixed Conifer/California Black Oak Forest

Conifers dominate that tree layer in this community. They include Douglas-fir, ponderosa pine, incense cedar, and sugar pine. There is very little white fir. Both oaks are also present. Oregon White oak is present around the margins and in openings. California black oak is found among the conifers but is overtopped by them. The large, old, decadent California black oaks appear to be remnants of a different looking, much more open community. Shrubs include snowberry (*Symphoricarpos albus*), tall Oregon-grape (*Berberis aquifolium*), serviceberry (*Amelanchier alnifolia*), mountain mahogany (*Cercocarpus betuloides*), oceanspray (*Holodiscus discolor*), little woodrose (*Rosa gymnocarpa*), and deerbrush (*Ceanothus intergerrimus*). There are few grasses in the forested areas except for patches of bulbous bluegrass (*Poa bulbosa*), and California fescue (*Festuca californica*). Medusa-head rye (*Taeniatherum caput-medusae*), hedgehog dogtail (*Cynosurus echinatus*), Idaho fescue (*Festuca idahoensis*), and California oatgrass (*Danthonia californica*) occur in or near openings. Forbs include pathfinder plant (*Adenocaulon bicolor*), strawberry (*Fragaria vesca*), arnica (*Arnica latifolia*), sweet-cicely (*Osmorhiza chilensis*), rattlesnake orchid (*Goodyear oblongifolia*) and Scouler harebell (*Campanula scouleri*).

Riparian

Riparian vegetation is confined to Oregon Gulch, its sometimes steep narrow canyon, and tributaries. Riparian herbaceous vegetation is found around some of the seeps and springs. Trees are Oregon ash (*Fraxinus latifolia*), willows (*Salix spp.*), and Douglas hawthorn (*Crataegus douglasii*). Shrubs include chokecherry (*Prunus virginiana*), Douglas spiraea (*Spiraea douglasii*) and deerbrush (*Ceanothus intergerrimus*) stands on shady banks near the stream. There are a number of herbaceous species: horsetail (*Equisetum arvense*), sedges (*Carex spp.*), cattail (*Typha latifolia*), and yellow monkeyflower (*Mimulus guttatus*). The rare species Howell's false-caraway (*Perideridia howellii*), and Bellinger's meadowfoam

(*Limnanthes floccosa ssp. bellingeriana*) occur in the riparian zone. Howell's false caraway is fairly common; however, Bellinger's meadowfoam is only known for a single site.

Exotic Plants

With the exception of grasses such as bulbous bluegrass (*Poa bulbosa*), medusa-head rye (*Taeniatherum caput-medusae*), hedgehog dogtail (*Cynosurus echinatus*), and Downy brome (i.e., cheatgrass, *Bromus tectorum*), the RNA is relatively free of invasive noxious weeds. Miller (1999) found yellow alyssum (*Alyssum alyssoides)*, bull thistle (*Cirsium vulgare*), and Dyer's woad (*Isatis tinctoria*) in the RNA. She apparently did not find starthistle (*Centaurea solstitialis*). Yellow starthistle is in close proximity to the RNA, mostly along existing roads and in open grassland/scrubland habitats. Medusa-head rye is the most widespread alien plant in the RNA.

Special Status Plants

Three BLM special status plant species that are endemic to southwest Oregon and adjacent northern California are known in the RNA: Bellinger's meadowfoam (Limnanthes floccosa ssp. bellingeriana), Greene's Mariposa lily (Calochortus greenei) and Howell's false-caraway (Perideridia howellii). No formal surveys for rare plants have occurred within the RNA; habitat exists for other rare plant species like Genter's fritillary (Fritillaria gentneri).

Bellinger's meadowfoam is found along a vernal tributary stream at a single location in the RNA. There are other populations of this endemic riparian species in the surrounding monument, to the east in Klamath county, and south into Siskiyou county in northern California. Greene's mariposa lily grows in open Garry oak thickets in deep high clay content soils south of Oregon Gulch creek and into the former Box O Ranch; at several other sites within the Cascade-Siskiyou National Monument; and immediately south into extreme northern California. These are the only known sites for this endemic species in the world. Howell's false-caraway is most common in and along the upper reaches of Oregon Gulch, and is known from Scotch Creek RNA, as well as several other drainages in southwest Oregon and northern California.

According to the Oregon Natural Heritage Program (ONHP) database, Bellinger's meadowfoam and Green's mariposa lily are Federal Species of Concern (i.e., old candidates for federal listing) and have an ONHP status of Category 1 (rare and imperiled in the State). Green's mariposa lily has a Natural Heritage system global rank of G2, which means this species is globally imperiled and vulnerable to extinction. Howell's false-caraway has an ONHP status of Category 4. While this endemic species is rare, it has apparently stable populations across its range.

It is BLM policy to protect, manage, and conserve Special Status Species and their habitats on lands administered by the BLM in such away that any bureau action will not contribute to the need to federally list these species.

Forest Health

The mixed conifer forest stands in Oregon Gulch RNA have a large mature sugar pine component that was previously open grown. Douglas-fir, incense cedar and ponderosa pine are found as well. Many mature trees have been found to exceed 250 years. Much of the stand is composed of younger co-dominant and suppressed Douglas-fir that originated after the last fire event, approximately 100 years ago. A few white fir are also found in the understory. The Douglas-fir is currently overstocked and competing directly with the sugar pine and other dominant tree species for water and nutrients. Sugar pine are being attacked by mountain pine beetle *Dendroctonus ponderosae* and red turpentine beetle *Dendroctonus valens* due to dense stand conditions and low vigor. Average decadal growth rates for sugar pine in these stands is well below the 1.5 inch diameter growth needed to maintain tree vigor at a level considered necessary to pitch out bark beetles. The stand is currently carrying over 220 square feet of basal area which is well above the 150 feet level preferred for pine. The forested plant associations are likely more dense at present than at any time since their initiation. The rate of sugar pine mortality has increased in the area during the last ten years. Most of the mortality occurred in 1995 during a localized mountain pine beetle outbreak.

Animals

There are no large-scale vertebrate surveys for Oregon Gulch RNA. However, there are lists for the general area that indicate species that might be expected in the RNA [see Nelson (1997); Appendix 10 in the Medford RMP (USDI 1995b); St. John (1984); and Trail (1999)]. Other workers have inventoried the RNA for breeding birds (Alexander 1999), aquatic organisms (Parker 1999), and butterflies (Runquist 1999).

Mollusks

Parker (1999) found the gastropod *Stagnicola* (Lymnaeidae) in the main channel and the Rosebud tributary and in the upstream meadow. *Physella* (Physidea) was present in sunlit stream pools in the lower reaches of Oregon Gulch. The springs in the RNA apparently do not support populations of pebblesnails.

Insects

Runquist (1999) collected 43 species of butterflies in the RNA the summer of 1999. The relatively high species count is a direct reflection of the ecological diversity of the RNA and the number and kind of plant communities upon which the butterflies rely for larval host plants and adult nectar sources. The wet meadow just to the southeast of Randcore Pass adds another seven species for a total of 50. Runquist noticed the sudden disappearance of several butterfly species in mid-July that correlated with the appearance of cattle in the wet meadow at the upper end of the RNA below the Randcore Pass road just outside the RNA boundary. He attributed this to trampling of vegetation and cattle consuming flowers that had been used by butterflies.

Parker (1999) sampled aquatic insects in Oregon Gulch. Those found were generally those that can survive warm water, are common in pool environments, or are adapted to survive summer drought. This is not surprising, given Oregon Gulch's low summer flows and warm water temperatures (see Hydrology section).

Amphibians

Parker (1999) observed Pacific treefrog (*Pseudacris regilla*) and rough-skinned newts (*Taricha granulosa*) in the headwater meadow and among pools along Oregon Gulch. Rough skinned newts have also been seen in the stock-pond /pump chance near the decommissioned road along the north facing slopes of the RNA toward the Box O Ranch. The treefrog tadpoles and metamorphic juveniles were observed in the isolated pools. It was the only breeding population of either species observed in the survey area that did not occur in artificial impoundments.

Fish

BLM electrofishing and visual surveys in Oregon Gulch have found many trout fry in approximately the first mile of stream (USDI BLM, unpublished data), only the last few hundred meters of which is within the Oregon Gulch RNA. A bedrock falls just within the RNA boundary appears to be a fish barrier. No fish have been observed above it (USDI, unpublished data; Parker 1999). Jenny Creek suckers (*Catostomus rimiculus*) have never been observed in Oregon Gulch.

The fry in the lower mile of Oregon Gulch, presumably redband trout (*Oncorhynchus mykiss ssp.*), are usually present in May and June. By July, the stream is often dry at the mouth. Some fry probably migrate into mainstem Jenny Creek; others are trapped in pools where chances of predation by raccoons or birds is high. Water temperatures in the lower mile of Oregon Gulch have been measured to be 85ºF, extremely high for fish survival (Bjornn and Reiser 1991). These temperatures may decrease fry survival in Oregon Gulch.

Birds

Alexander (1999) conducted a breeding bird survey of the RNA in June 1999. Seventeen monitoring stations were established and 16 were visited twice. A total of 42 species were encountered. Thirteen species are conservation focal species for Oregon and/or California.

The area has been surveyed for Great Gray Owls and Spotted Owls. Great Gray owls were not seen during surveys in the RNA. Northern Spotted Owls are known to nest in the RNA (USDI BLM unpublished data). Timbered portions of the RNA have been mapped as roosting and foraging habitat using modified McKelvie Spotted Owl habitat criteria.

Small game species in the general area include Ruffed grouse (Bondosa umbellus), Blue Grouse (*Dendragapus obscurus*), Wild Turkey (*Meleagris gallopavo*), Mountain Quail (*Oreortyx pictus*), and Valley Quail (*Callipepla californicus*).

Mammals

The Black bear (*Ursus americanus*), Cougar (*Felis concolor*) and Black-tailed deer (*Odocoileus hemionus columbianus*) are known to occur within the RNA. Elk also use the RNA seasonally. Small game species in the general area include Western Grey Squirrel (*Sciurus griseus*).

Exotic Animals

Several alien animals are known or suspected to be present in the RNA. These include birds, pigs, and cattle. Opossum (*Didelphis marsupialis*) have not been observed within the RNA; however they are present in the low elevation valleys in the Rogue and Klamath river basins.

Birds

Turkeys (*Meleagris gallopavo*) have been observed on the former Box O ranch and in the vicinity of Hobart Bluff. It is likely that they are also found in the RNA because of the oak communities. The native animals affected or displaced by these birds are unknown but likely include mast eaters such as western gray squirrels, black-tail deer, acorn woodpeckers.

Starlings (*Sturnus vulgaris*) are also suspected in the area. These birds compete with native species, especially western blue birds (*Sialia mexicana*) for cavity nesting sites.

Pigs

The “Randcore” pot-bellied pig (i.e., Sus “*ventricosus Randcorensis*”) was observed and photographed along the Rosebud Helipond road in the fall of 1997. It is assumed that the female pig was a pet that escaped from a hunting camp at Randcore Pass or from a ranch near Lincoln (a pig jaw was collected near the Pinehurst Airport). The establishment of feral pigs could have a major adverse ecological impact on local terrestrial ecosystems. There have been no observations of feral pigs since 1997 in or near the RNA.

Cattle

Livestock grazing currently occurs within the RNA. According to BLM RNA policy (BLM Manual 1623.37C), this activity should be managed within RNAs to promote maintenance of the key characteristics for which the area is recognized. Oregon Gulch RNA is also known as Oregon Gulch Pasture and is a part of the Ashland Resource Area grazing plan. As previously noted, cattle may impact butterfly populations in the wet meadow that supplies water to Oregon Gulch (Runquist 1999). There have been no studies in Oregon Gulch RNA to monitor or establish the effect of grazing on the watershed, the ecosystem, or the sensitive plants.

Site history

Native Americans who may have visited the Oregon Gulch area and utilized its resources include the Klamath, the Shasta, and the Takelma. All of these Native American groups came to this area during the warmer months of the year to hunt, gather vegetable foods, trade, and to meet with each other for various social purposes (USDI 1999, p.26).

Jenny Creek lies to the east of the RNA. Jenny Creek, a major perennial stream, contained riverine resources and adjacent environments that were conducive to hunting and gathering. Agate Flat which is located south of the RNA, was a major source of toolstone material (cryptocrystalline silicates or CCS). Good quality material occurs in great quantities and is exposed on the surface where it could be easily gathered and utilized.

There were numerous resources upon which these native peoples depended. Roots and bulbs, such as camas (*Camassia*) and various forms of *Perideridia* (e.g., ipos, yampa) provided starchy staples, as did acorns from oak trees. Fish, deer, elk, and small mammals provided staple proteins, augmented by a wide variety of berries, nuts, and seeds (e.g., tarweed seeds, *Madia* spp.). Other plants and animals were used for fiber, tools clothing, and medicines.

Fire probably was the most significant tool used by native peoples to enhance those resources useful to them. Fire assisted in promoting, maintaining, and harvesting staple crops, such as acorns and tarweed, and maintained open meadows and prairies, which were crucial locations for subsistence resources including game, roots, bulbs, berry patches, and grass seeds. Fire also promoted habitat important to large game. Burning took place during the spring or fall and at specific intervals, and contributed to the development and maintenance of prairies and savannahs, oak and oak/pine woodlands, and upland meadows.

Settlement of southern Oregon by Euro-Americans increased substantially after gold was discovered in Jacksonville in 1852. Newcomers settled throughout the Rogue Valley, utilizing open savannas and grasslands for agriculture and livestock ranching. Conflicts over land between miners and settlers and Native Americans culminated in removal of the remaining Native Americans. The Klamath Indians were confined to the Klamath Reservation east of the Cascades. Some Shasta families however, managed to remain in the Shasta Valley and along the Klamath River, or escaped from the northern reservations to find their way home.

Settlers in the Rogue Valley began seeking summer pastures in these uplands by the 1860s. Livestock grazing was the major use of these uplands for much of the last half of the nineteenth century. Both cattle and sheep ranged through these upland pastures. The latter decades of the nineteenth century witnessed uncontrolled expansion of sheep and cattle grazing, provoking continual "bickerings and wranglings" among rival grazers for the best range. Creation of the Forest Reserves in 1893 and later the Forest Service in 1907 brought some order to the range.

Like the Native Americans before them, these local ranchers and settlers often set fire to large areas to promote the growth of berries, browse for game, and forage for their stock. Sometimes these fires swept through the areas of heavy timber; it seems the fire management of historic settlers was less discriminate than the practices of their Native American predecessors.

George Wright, long time area resident, typed up his recollections in 1954 and mentioned the Oregon Gulch area on several occasions. This anecdotal history contains important information regarding place names, and the early history of the area. This information is in attached at the end of this document and can be found in Appendix C of the CSNM Draft Plan.

Human Features

Features in the RNA were built for commodity extraction and enhancement, fire control, transportation, and administrative purposes. These include roads, fire control, and livestock facilities.

Transportation

Road density is about 1.9 miles per square mile. Although road density is not high, poor road location has created major problems for Oregon Gulch (USDI 1995b). There are currently three roads in the RNA: BLM Road 40-3E-19 and 19.1, Lincoln Creek Road 40-3E-12.1. BLM Roads provide access to private land in T.40S.,R.4E., Sections 20 and 30.

BLM Roads 40-3E-19 and 19.1 leave Lincoln Creek Road 40-3E-12.1 just top the south of Randcore Pass. -19.0 leads to private and BLM lands in the Keene Creek drainage. -19.1 leads to the Rosebud Helipond. Both roads are natural, unsurfaced, badly rutted, and become extremely slick when wet.

Lincoln Creek Road 40-3E-12.1 extends beyond Randcore Pass through the southwest corners of the RNA where it enters private land at the SW corner of the NE1/4 of the NE1/4, T.40S.,R.4E., Sec.30. The road continued to Agate Flat until 1996 when a section through BLM land at T.40S.,R.4E., Sec.30, W1/2SE1/4 was decommissioned, effectively ending the road. From Randcore Pass to private land the road is rocked. On private land it is a natural (unsurfaced) road. It also leads to the decommissioned Road 40-4E-30 and offers access to the RNA in T.40S.,R.4E., Sec. 29.

BLM Road 40-4E-30 along the north-facing south slopes of the RNA was effectively decommissioned in 1996 and is blocked by barricades at the east RNA boundary and by a locked gate at the former Box O ranch boundary to the east. The lower portion of the road was not decommissioned to reduce the possibility of the spread of noxious weeds.

Water Developments

There are four small, operational, livestock watering facilities with water rights in the RNA (Table M-3). The BLM also retains water rights on several springs within the RNA.

Table M-3. RNA Water Developments with Water Rights

Name	Township	Range	Section	QtrQtr	Size (acre-feet)
Oregon Gulch Reservoir #1	40 S.	4 E.	29	NWSE	0.08
Oregon Gulch Reservoir #2	40 S.	4 E.	29	NESW	0.06
Root Spring Reservoir	40 S.	4 E.	30	NENE	0.01
Twin Pines Spring Reservoir	40 S.	4 E.	19	SESW	0.02

Oregon Gulch Reservoirs #1 and #2 (Range Files #0066, #0065, Ashland Resource Area, Medford BLM). Both earthen detention dams were built in 1958 to check erosion, provide water for livestock, and fire purposes. Reservoir #1 is located above the decommissioned Oregon Gulch Road 40-4E-30 in an unnamed tributary of Oregon Gulch just below a small seep in T.40S., R.04E., Section 29, NW1/4SE1/4. Reservoir #2 is located below the decommissioned Oregon Gulch Road 40-4E-30 at the site of a small spring on an unnamed intermittent tributary of Oregon Gulch in T.40S., R.04E., Section 29, SW1/4NE1/4. Reservoir #1 is entitled to store 0.08 acre-foot. The dam at Reservoir #1 failed during an unusually heavy runoff, probably during the 1964 flood year. Reservoir #2 is entitled to store 0.06 acre-foot and was described in 1973 as a good stable water source.

Rosebud Helipond is used as a water source for fire fighting and has a total storage volume of 0.14 acre-feet. It is shown as a feature on the USGS 7.5 minute Soda Mountain Quad. map and is located in T.40

S., R.04 E., Section 29, NE1/4NW1/4. Water is piped from a spring development to the helipond via a livestock watering tank. The helipond supports standing water marsh vegetation with various emergent rushes, sedges, and cattails around its margin and floating duckweed on it surface. There is no defined channel below the helipond.

Fences

Fence 505 passes through the upper part of the RNA in a southwest northeast direction through T.40S.,R.4E., Sec.30, NE1/4, NW1/4 29, S1/2 20 to below the summit of Rosebud Mountain to the SW1/4 of 21. The fence is used to control movement of livestock to the lower portion of the RNA. An historic maintained fence separates the RNA from the former Box O Ranch along the section line between Sec. 28 and 29.

Surrounding Land Use

BLM manages most of the surrounding lands; however there are small parcels of private land adjacent to the RNA. The acquisition of several of the private parcels would have been desirable in order to include all of the Oregon Gulch drainage area in the RNA. However, most of these lands have experienced fairly intensive management (logging and roads) and are generally no longer suitable to be included in the RNA other than to protect the RNA from potentially damaging activities that can occur on private land (e.g., substandard road construction, soil erosion, wildlife habitat destruction, development).

Public land

Until the establishment of the National Monument, most of the surrounding land was in the BLM Jenny Creek Late-Successional Reserve established by the Northwest Forest Plan. The LSR was to be managed according to Jenny Creek Late-Successional Reserve Management Plan (USDI 1999). Land to the east, acquired by the BLM in 1995, was the private Box O ranch, which was operated for many years as a private cattle ranch.

Private land

Private land in T.40S.,R.4E.,Sec.20,30. was formerly owned by Roseburg Lumber Company (the current owner is Larry D. Olson 700 Port Ave. St. Helens, OR) and was recently logged.

MANAGEMENT CONSIDERATIONS

Botanical/Plant Communities

Policy and Agency Standards

The following directives regard maintaining, protecting or restoring relevant and important botanical values of RNAs:

- RNAs are established primarily with scientific and educational activities intended as the principal form of resource use for the short and long term. Research proposals should be submitted to the appropriate BLM field office prior to commencing work. Studies involving the manipulations of environmental or vegetational characteristics or plant harvest must be approved. Because the overriding guidelines for management of an RNA is that natural processes are allowed to dominate, deliberate manipulation, such as experimental applications, is allowed only on a case specific basis when the actions either simulate natural processes or important information for future management of the RNA is gained (BLM Manual, 1623.37 (A)(B)).
- Preserve, protect, or restore native species composition and ecological processes of biological communities (including Oregon Natural Heritage Plan terrestrial and aquatic cells) in research natural areas. These areas will be available for short- or long-term scientific study, research, and education

and will serve as a baseline against which human impacts on natural systems can be measured (PNW 1991).

RNA Management Goal

Preserve natural features in as nearly an undisturbed state as possible for scientific and educational purposes. Natural processes should dominate, although deliberate manipulations which simulate natural processes are allowed in specific cases (USDI 1987).
Current Information

The ecological condition of all plant communities identified as key elements within the RNA were considered to be of overall high quality when the area was nominated as an RNA in the 1990s (Schaaf 1990). Non-native weedy species, particularly hedgehog dogtail, *(Cynosurus echinatus),* medusa-head *(Taeniatherum caput-medusae*), dyers woad (*Isatis tinctoria*) and yellow star thistle (*Centaurea solstitialis*) (if present) in some of the savanna and woodland areas threaten the integrity of these plant communities. The spread of these and other non-native species into the RNA from surrounding private land is an ongoing threat.

Exclusion of a natural fire regime has resulted in encroachment of shrubs and conifers into the edges of open oak/grass savanna areas, decreasing the extent of this plant community in the RNA. Underbrush and tree density have increased in woodlands and forest areas, increasing fire fuel loads and the risk of high-intensity, stand-replacement fires.

The main plant community management objective within the Oregon Gulch RNA is to maintain or enhance their key attributes. Ideally this would be accomplished by allowing succession to occur as a result of a natural disturbance regime, which could include wildfire, storms, normal mortality, drought, etc. However, because of past human interference, in the form of fire suppression and livestock grazing, pro-active management is necessary to re-establish some of these natural processes.

All plant communities are subject to natural disturbances and corresponding succession over time. It is not the intention of RNA management actions to halt this natural succession and disturbance process at one particular stage. Using prescribed burning as a management tool is an attempt to re-introduce fire as a natural process. Excluding fire during the past 100 years has resulted in a build-up of fire fuel loads and encroachment of trees and shrubs into savannas and meadows. Reintroducing fire in small areas under controlled circumstances would reduce fire fuel loads, as well as improve the ecological condition of plant communities in which fire has historically been a component by restoring native species composition. Allowing naturally occurring fires to run their course at the RNA is constrained by the proximity of private property surrounding the RNA. Utilizing fire in small areas at different times throughout the RNA is intended to resemble the patchiness of natural disturbances. With this approach, at any one time different areas of each plant community will be in different successional stages, mirroring normal ecosystem conditions.

Outlined below are goals, objectives, and management actions for each plant community requiring management within the RNA. Other important management considerations affecting plant communities within the RNA are discussed under separate headings (e.g., introduced and noxious weedy species, insects and disease, livestock grazing, timber harvest, etc.). Continuing monitoring of plant communities, discussed in Section VI, is vital to the process of tracking and evaluating responses to natural or prescribed disturbances, determining the effectiveness of management actions or research activities, and making necessary adjustments to insure that management goals continue to be met.

Garry Oak/Wedgeleaf ceanothus/Grass or Scrubland

Goals and Objectives

- Maintain open meadows by reducing the encroachment of conifers and shrubs.
- Decrease non-native and increase native species.
- Re-introduce fire as a natural ecological process, especially in chaparral/grassland component.

Issues

- Competition from non-native weedy species.
- Current fire suppression tactics.
- Encroachment of trees and shrubs into meadows from surrounding woodlands.
- High densities of shrub mosaic.
- Limited access to the site.
- Limited funding to accomplish objectives.
- Constraints to prescribed burning, including air quality controls, proximity to adjacent private landowners, season of burn, availability of native plant seeds and starts for re-planting after burning, restrictions on using equipment.
- The RNA is utilized in an existing grazing allotment.
- Existing populations of Green's mariposa lily in open grassland/scrubland inclusions.

Management actions

- Collect and propagate native grass and forb seeds from savanna areas within the RNA.
- Establish pre-project monitoring plots to gather baseline data for post-project comparison to determine the effectiveness of the management activity.
- Prescribe burn meadows to reduce non-native weedy species and encroaching trees and shrubs or manually thin trees and shrubs, particularly seedlings and saplings, in and around the perimeter of meadows/savannas. Design activities to maintain or enhance Green's Mariposa lily or other rare special status species.
- Prescribe burn chaparral component to reduce fuels and regenerate shrubs.
- Re-seed burned areas with native grasses and forbs.
- Conduct post-project vegetation surveys and periodic monitoring, especially in chaparral component.

Western Juniper/Garry Oak scrubland

Management goals, issues, and actions are similar to Garry Oak/Wedgeleaf ceanothus grass or scrubland. However, more attention needs to be focused on the relationship between Garry oak and juniper. Since juniper is considered fire sensitive, the extensive use of prescribed fire would reduce its abundance across the landscape over time. A more detailed fire history and better understanding of community changes are required before the application of prescribed fire within this plant association.

Garry Oak/Ponderosa Pine forest

Woodland component

Goals & Objectives

- Maintain open woodland, dominated by Oregon white oak, ponderosa pine and associated native species.

- Reduce Douglas-fir and incense cedar conifer seedlings.
- Reduce fire fuel loads.

Issues

- Fire suppression resulting in conifer recruitment and increased fuel loads and ladders.
- Presence and competition from non-native plant species.
- Limited access to the site.
- Limited funding to accomplish objectives.
- Constraints to prescribed burning, including air quality controls, proximity to adjacent private landowners, season of burn, availability of native plant seeds and starts for re-planting after burning, restrictions on using large mechanized equipment.

Management Actions

- Establish pre-project monitoring plots to gather baseline data for post-project comparison to determine the effectiveness of the management activity.
- Utilize prescribed burning or manual thinning to reduce conifer recruitment and fire fuel loads.
- Re-seed between trees after burning with native grasses and forbs.

Grasslands and meadow component

Goals

- Maintain open meadows by reducing the encroachment of conifers and shrubs.
- Decrease non-native and increase native species.

Issues

- Competition from non-native weedy species.
- Encroachment of trees and shrubs into meadows from surrounding woodlands.
- Limited access to the site.
- Limited funding to accomplish objectives.
- Constraints to prescribed burning, including air quality controls, proximity to adjacent private landowners, season of burn, availability of native plant seeds and starts for re-planting after burning, restrictions on using mechanized equipment.
- Cattle grazing.
- Existing sites for the rare Green's Mariposa lily.

Management actions

- Collect and propagate native grass and forb seeds from savanna areas within the RNA.
- Establish pre-project monitoring plots to gather baseline data for post-project comparison to determine the effectiveness of the management activity.
- Prescribe burn meadows to reduce non-native weedy species and encroaching trees and shrubs or manually thin trees and shrubs, particularly seedlings and saplings, in and around the perimeter of meadows/savannas. Design activities to protect or enhance Green's Mariposa lily sites.
- Re-seed burned areas with native grasses and forbs.

Mixed Conifer/California Black Oak forest

Goals

- Maintain ecosystem function in the mixed conifer/California black oak plant community cell.
- Protect mature forest stands from catastrophic disturbance events such as wildfire and insect outbreaks, including monitoring for Sudden Oak Death.
- Design management activities that restore natural ecosystem and disturbance processes.

Issues

- Once open grown sugar pine stands now contain overly dense component of Douglas-fir.
- Fire suppression has resulted in increased stand densities.
- Increased mortality from insect attacks on sugar and ponderosa pine.

Management Actions

- Decrease stand densities and improve health of Sugar pine stands by understory thinning of Douglas-fir and re-introduction of prescribed fire.
- Monitor health of conifer stands.

Riparian (also see Hydrology and Aquatic Habitat section)

Goals

Maintain and restore the function, structure, and vegetative composition of the riparian zones, including seeps and springs.

Issues

- Riparian areas subject to grazing and localized areas of periodic high utilization.
- Disrupted hydrologic function from past road building and culverts.
- Isolated riparian impacts from grazing and water impoundments on springs/seeps.
- Lack of riparian survey data.

Management Actions

- Perform riparian surveys documenting hydrologic and riparian vegetation condition.
- As part of the Cascade-Siskiyou National Monument grazing study, survey and document the effects of current grazing on the riparian system, including effects to the rare Bellinger's meadowfoam.
- Fence impacted riparian sites if needed.
- Restore riparian areas within the RNA that are not properly functioning based on results of Riparian surveys.

Introduced Species and Noxious Weeds

Policy and Agency Standards

The introduction of exotic plant and animal species is normally not compatible with the maintenance or enhancement of key RNA features. Certain re-introductions of formerly native species using proper controls may be specified in plans (USDI 1986).

Take any action necessary to prevent unnecessary or undue degradation of the lands Federal Land Policy & Management Act (FLPMA 1976).

The public Rangelands Improvement Act of 1978 directs the BLM to "manage, maintain, and improve the condition of public rangelands so they become as productive as feasible . . . ."

Goals

- Maintain and/or restore native plant communities.
- Contain or eradicate exotic and noxious weeds.
- Prevent the introduction of new exotic or noxious weed species.

Current information

Several areas within the RNA are dominated by introduced (alien) grasses, namely medusa-head rye (*Taeniatherum caput-medusae*), hedgehog dogtail (*Cynosurus echinatus*), bulbous bluegrass (*Poa bulbosa*), and cheat grass (*Bromus tectorum*). Occurrences of yellow alyssum (*Alyssum alyssoides)*, bull thistle (*Cirsium vulgare*), and small populations of Dyer's woad (*Isatis tinctoria*) are also documented. Yellow starthistle (*Centaurea solstitialis*) populations are in close proximity but are not documented in the RNA. No weed treatments have occurred in the RNA.

Issues

- Exotic plants and noxious weeds threaten the integrity of key features within the RNA.
- Disturbance as a result of wildfire, vegetation treatments (burning or thinning), or livestock grazing can create optimum habitat for exotic and noxious weeds.
- High cost for weed treatments due to poor access.
- Lack of detailed weed surveys within the RNA.
- Lack of proven methods for controlling large infestations of exotic grasses like cheatgrass or bulbous bluegrass.
- Lack of large quantities of native grass and forb seed for restoration.

Management Actions

- Survey and map existing weed infestations.
- Control weeds within and adjacent to the RNA using an integrated weed management approach utilizing mechanical, cultural, biological, and chemical means.
- Collect and propagate native seed sources within the watershed.
- Vegetative treatments to enhance key RNA features must be tailored so as to (1) reduce weed infestations; and (2) not increase existing populations.
- As part of the grazing study, evaluate whether grazing is increasing noxious or exotic weeds.

Endangered and Rare Species

Policy and Agency Standards

The Endangered Species Act (USDI 1973, Fight Wildlife Service 88, as amended) governs and provides for the conservation of listed and proposed species, and their habitats, on federal lands. The BLM Policy regarding Special Status Species, including federally listed and proposed species, state listed species, and species designated as "sensitive" is to protect and conserve federally listed and proposed species, manage their habitat to promote recovery, and (for sensitive and state listed species) to ensure that BLM actions will not contribute to the need to list sensitive or state listed species as federally listed (BLM Manual 6840).

Goals

Maintain or enhance BLM Special Status Species occurrences and habitat within the RNA.

Wildlife

Current information

Suitable habitat and a spotted owl center of activity exists in the RNA. The nest stand used by a pair of owls falls inside the RNA boundary. No other federally listed wildlife species are known to occur within the RNA.

Issues

Habitat manipulation activities (burning, vegetation manipulation, etc.) proposed to occur in the RNA must be designed to protect, maintain, or enhance owl habitat.

Management Action

Periodic monitoring of nest sites.

Plants

Current Information

Three species are documented in the RNA, Bellinger's meadowfoam (*Limnanthes floccosa ssp. bellingeriana*), Greene's Mariposa lily (*Calochortus greenei*), and Howell's false-caraway (*Perideridia howellii*). Two of these species, Bellinger's meadowfoam and Howell's false-caraway, are found within the riparian zone of Oregon Gulch creek. Howell's false-caraway is fairly "common" within the RNA and within the surrounding watersheds in the Monument. This species was dropped from the Oregon Natural Heritage lists (ONHP 2004) and is no longer included. While it is a southwestern Oregon endemic, populations are apparently secure. Bellinger's meadowfoam is quite rare, and is known for a single location in the RNA. It has an Oregon Natural Heritage ranking of G4/S2, which means it globally secure but it is imperiled within the State because of rarity, or because other factors demonstrably make it vulnerable to extinction. Green's mariposa lily is extremely rare, globally and within the state. This species has an ONHP ranking of G2/S2, meaning that range wide it is imperiled because of rarity, or because other factors demonstrably make it vulnerable to extinction. The status of these three species occurrences in the RNA is not known; recent monitoring has not occurred. No formal rare plant surveys have occurred within the RNA. Suitable habitat does exist for several other Bureau Special Status plants, including the Federally listed Gentner's fritillary (*Fritillary gentneri*).

Issues

- No formal rare plant surveys within the monument.
- No monitoring of existing populations.
- Affects from periodic grazing are not known for existing populations.

Management Actions

- Complete rare plant surveys within the RNA.
- Establish monitoring plots, as part of the grazing study, for Bellinger's meadowfoam and Green's mariposa lily.
- Protect populations from grazing if needed to maintain viability of these populations.

Insects and Pathogens

Policy and Agency Standards

Ideally, catastrophic natural events, such as insect infestations, should be allowed to take their course. Insect or disease control programs should not be carried out except where infestations threaten adjacent vegetation or will drastically alter natural ecological processes within the tract (USDI 1986).

Goals and Objectives

- Maintain historic ecosystem functions in the mixed conifer/California black oak plant community cell.
- Protect mature forest stands from catastrophic disturbance events such as wildfire and insect outbreaks.
- Design management activities that restore natural ecosystem and disturbance processes.

Current Information

The Oregon Gulch mixed conifer/California black oak plant communities are at risk of beetle infestation. Two variants of mixed conifer are found in the RNA. Most of the stands to the north are more mesic, have a dominant sugar pine component and dense Douglas-fir reproduction. The forests to the south are drier with few sugar pines and are more ponderosa pine and incense cedar dominated. The young Douglas-fir component in the south is not as dense.

The stands are overstocked with subdominant Douglas-fir due to fire exclusion for the last 100 years. It appears that parts of the RNA were burned about 60 years ago. A localized mountain pine beetle (*Dendroctonus ponderosae)* outbreak in 1995 caused mortality of approximately 30 percent of dominant old growth sugar pine component as well as a few large ponderosa pine. Red turpentine beetle (*Dendroctonus valens)* is also common in the stand. In the summer of 2000, Master's candidate Cori Francis (Oregon State University and Medford District BLM) characterized stand structure while writing a prescription for the forest types in Oregon Gulch. Her data indicates that the mixed conifer/California black oak forest type continues to be at risk because of slow growth and overly dense stocking. Pine mortality currently continues at a high, although not epidemic, rate annually. Pine will continue to be replaced by Douglas-fir and occasionally white fir in gaps that result from pine mortality. Further, white pine blister rust *(Cronartium ribicola)* is present in areas near the RNA, which reduces the likelihood that young sugar pine will grow to maturity.

Currently, individual sugar and ponderosa pine databases have been developed in an effort to follow growth rates, ages and tree vigor. Annual aerial surveys are used to track insects (beetles).

Needed information

Annual monitoring of all types of disturbance agents is needed. Revisiting permanent plots established in 2000 at 5-year intervals is desirable in order to monitor potential insect and disease problems in the future. The individual large sugar and ponderosa pine database needs to be updated every 3-5 years.

Insects

- Mountain pine beetle (*Dendroctonus ponderosae*)
- Western pine beetle (*Dendroctonus brevicomis*)
- Red turpentine beetle (*Dendroctonus valens*)

Recent aerial flight survey data and ground checking indicates localized epidemics and increased mortality rates due to overly dense stands (often up to 300 feet of basal area) with individual large dominant old growth pine showing reduced (< than 1/2”) decadal radial growth rates. Both of these parameters indicate stands and individual trees are at risk for beetle infestation. Generally, forest stands in the vicinity at the ecoregion level (Klamath River Ridges) are at risk for beetle epidemics. The unique structure of the heritage stand (6-8 dominant sugar pine per acre) with hundreds of small Douglas-fir per acre puts the RNA at an even higher risk for beetle infestation as shown by the 1995 outbreak. All three beetles currently put the forests at risk, given fire exclusion and high resultant densities of smaller competing trees.

Management Actions

Risk reduction management activities will involve thinning small Douglas-fir, piling and burning, and then conducting a prescribed underburn. Thinning would not involve cutting larger trees. The stand would be treated at a level that would reduce risk to catastrophic fire and beetle infestation by reducing ladder and fine fuels, reducing competition for water and opening up the stand while maintaining the large tree stand component. Costs to accomplish these activities are well known from other similar projects. Funding can be obtained through forest health monies. Management activities regarding insect risk reduction and fuels reduction need to occur simultaneously in the near future.

Pathogens

- White pine blister rust *(Cronartium ribicola)*
- Western dwarf mistletoe of ponderosa pine *(Arcuethobium campylopodum)*
- Douglas-fir dwarf mistletoe *(Arcuethobium douglasii)*
- Shoestring root rot *(Armellaria mellea)*
- Black stain *(Verticicladiella wagonerii)*
- Velvet top fungus *(Phaeolus schweinitzii)*

White pine blister rust (*Cronartium ribicola)* is an exotic pathogen introduced to the Pacific Northwest about 80 years ago. It causes mortality by girdling small sugar pine due to stem cankers. Larger trees are generally resistant given their size. At present sugar pine reproduction up to pole sized trees has decreased in the Klamath River Ridges Ecoregion 78g because of the rust. Forest gaps that historically would have been partly filled by sugar pine are now being filled with Doug-fir, white fir, incense cedar and ponderosa pine. The result is a “future forest” with decreasing amounts of sugar pine in the stand. Stand dynamics and resilience will change over time due to its absence. Oregon Gulch RNA has very little evidence of blister rust, which is likely due to some microclimate effect due to moisture. Gooseberries and currents (*Ribes* sp.), which are the alternate host for blister rust, are present in the RNA. Sugar pine is a species that lends unique biodiversity attributes to mixed conifer forests because of its general resistance to drought and fire. The RNA will be monitored for blister rust incidence.

Western dwarf mistletoe in ponderosa pine is common in the RNA, but is not considered a problem because it is present at a natural level. Many of the old growth trees exhibit dwarf mistletoe in the lower crown only, indicating that they outgrew the infections earlier.

Douglas-fir dwarf mistletoe is present in heavy amounts in some groups of old growth Douglas-fir within the RNA and has contributed to mortality of mature trees. Douglas-fir mistletoe is a naturally occurring parasitic plant that is beneficial to wildlife in old growth forests. Its presence in the RNA is not considered a problem. Groups of Douglas-fir infected by mistletoe will contribute to diverse canopy structure. Mortality of tree groups will result in gaps being formed and will contribute to coarse woody debris.

Shoestring root rot *(Armellaria mellea)* is present at low levels around ponderosa pine. It is a secondary pathogen that occasionally attacks stressed trees. It is not a significant problem currently. Stand density reduction and prescribed burning will reduce shoestring root rot levels.

Blackstain *(Verticicladiella wagonerii)* was observed on one isolated Douglas-fir in 1999 in the RNA. It is spread by root grafts or beetles. Very little blackstain has been noted in the monument. It is unlikely to be a significant problem in the RNA. Its presence should be monitored as it may infect the Douglas-fir in or near existing roads or disturbed areas. Ponderosa pine can also be infected.

Velvet top fungus was noted in association with groups of dwarf mistletoe killed Douglas-fir. It is a commonly found pathogen (saprophyte) found in old growth stands. In this instance it is not considered a problem.

Management Actions

Thinning small trees (primarily Douglas-fir) from below and prescribed burning will increase overall forest stand vigor. As water deficit stress is reduced, susceptibility to diseases will be reduced as well. The pathogens listed above, with the exception of *Cronartium ribicola* are not currently present at a level that will cause significant impacts to RNA forest types. Blister rust is not currently found to be a significant influence in the RNA.

Summary Insect and Disease

Bark beetles pose the most significant threat to the integrity of the Oregon Gulch forests. Overly dense stands are present due to fire exclusion over the last 100 years. Dense stocking levels of Douglas-fir are causing stress to dominant pine by competing for available moisture. Tree stress increases with increasing water deficits making pine more susceptible to beetle outbreaks. A mountain pine beetle outbreak in 1995 is a precursor to further problems in Oregon Gulch as well as surrounding areas. Natural processes must be re-established in order to keep the RNA forest community cells viable. Not all insects and pathogens present in the RNA were listed. Only those thought to be significant factors were discussed. No information is available for insect and pathogen issues for oak woodlands or chaparral communities. Obtaining this information will be important in planning to maintain RNA values.

Lands & Boundary/Edge Effects

Policy and Agency Standards

- Maintain or increase public land holdings in Zone I by retaining public lands and acquiring non-federal lands with high public resource values.
- “Acquire lands and interests in lands needed to manage, protect, develop, maintain, and use resources on public lands...in conformity with land-use plans that apply to the area involved.” (BLM Manual, 2100.05, 1984).

Goals and Objectives

Maintain the integrity of the RNA.

Current Information

The Oregon Gulch RNA covers an area of 1,056 acres of public land. The boundary is defined by the limits of the watershed and property lines between the public and private lands. Approximately 290 acres of private lands are in the drainage; however, the key plant communities for which the RNA was designated are no longer intact on the adjacent private lands.

Management Actions

Periodic inventory to assure no trespass from activities on private lands.

Roads and Utilities Rights-of-Way

Policy and Agency Standards

Public uses such as roads, pipelines, communication sites, and power lines should avoid the designated area and be anticipated in activity plans. Road closures or restrictions may be considered appropriate in some instances (USDI 1986). Roads are generally prohibited in RNAs. However, old roads or unimproved tracks often exist (PNW 1991).

Goals

Ensure that existing roads do not contribute to any loss of integrity of the RNA communities, including the riparian area.

Current Information

There are no utility rights-of-way (ROW) in the RNA. Several old jeep roads exist within the RNA and most have been closed and stabilized and are no longer maintained. One open road (40-4E-19.2), which provides access to the private parcel in Section 30 from Randcore Pass, serves as the boundary along the NW edge of the RNA. This road is under a reciprocal agreement. A portion of road 40-4E-19.0 is also under a reciprocal agreement and provides access to the private parcel in Section 20. No future ROW grant requests are anticipated through the RNA.

Fire Management

Policy and Agency Standards

In 1995, the latest Federal Fire Policy (USDA 1995) was issued directing federal land managers to expand the use of prescribed fire in order to reduce the risk of large wildfires due to unnatural fuel loadings and to restore and maintain healthy ecosystems:

- Base the use of prescribed fire on the risk of high intensity wildfire and the associated cost and environmental impacts of using prescribed under-burning to meet protection, restoration, and maintenance of crucial stands that are currently susceptible to large-scale catastrophic wildfire.
- Reintroduce under-burning across large areas of the landscape over a period of time to create a mosaic of vegetative conditions and seral stages. This is accomplished by using prescribed fire under specific conditions in combination with the timing of each burn to reach varying fire intensities. Treatments should be site-specific because some species with limited distribution are fire intolerant (USDA 1995).
- Where perpetuating a seral stage of plant succession is important, prescribed fires may be specified in the activity plan, but only where they provide a closer approximation of the natural vegetation and governing processes than would otherwise be possible. Application of prescribed burns normally should be performed closely approximating the "natural" season of fire, frequency, intensity, and size of burn. The burn should be followed by a fire effects report documenting vegetative response (USDI 1986).
- Adhere to smoke management and air quality standards of the Clean Air Act and State Implementation Plan for prescribed burning (USDA 1995).

Goals and Objectives

Reintroduce fire into the RNA to re-establish a natural ecological process and to maintain, enhance or restore the structure and composition of the key plant communities. Specific objectives include the following:

- Increase the extent of oak/pine savannas by removing encroaching hardwood and conifer seedlings and shrubs.
- Reduce non-native and increase native grass and forb species.
- Invigorate chaparral stands by removing decadent shrubs and creating openings for native grasses and forbs.
- Maintain and improve existing grasslands and meadows by using prescribed fire to invigorate native grasses, provide a good bed for reseeding, and reduce encroaching shrubs and conifers.
- Control wildfire in mixed conifer stands to protect losses to surrounding landowners.
- Reduce fuel loadings created from thinning activities.

Current Information

Fire is recognized as a key natural disturbance process throughout southwest Oregon (Atzet and Wheeler 1982). Human-caused and lightning fires have been a source of disturbance to the landscape for thousands of years. Native Americans influenced vegetation patterns for over a thousand years by igniting fires to enhance values that were important to their culture (Pullen 1996). Early settlers to the Rogue and Klamath Valleys used fire to improve grazing and farming and to expose rock and soil for mining. It is not known if fire was used in this manner historically in the RNA. Fire has played an important role in influencing successional processes. Large fires were a common occurrence in the area based on fire scars and vegetative patterns and were of varying severities.

In the early 1900s, uncontrolled fires were considered to be detrimental to forests. Suppression of all fires became a major goal of land management agencies. From the 1950s to present, suppression of all fires became efficient because of an increase in suppression forces and improved techniques. As a result of the absence of fire, there has been a build-up of unnatural fuel loadings and a change to fire-prone vegetative conditions. Fire frequency also decreased as the use of fire by native peoples decreased due to their disappearance from the landscape by disease or translocation to reservations.

Based on calculations using fire return intervals, five fire cycles have been eliminated in the southwest Oregon mixed conifer forests that occur at low elevations (Thomas and Agee 1986). Species, such as ponderosa pine and oaks, have decreased. Many stands that were once open are now heavily stocked with conifers and small oaks, which has changed the horizontal and vertical stand structure. Surface fuels and laddering effect of fuels have increased, which has in turn increased the threat of crown fires, once historically rare.

Many seedling and pole size forests are not on a trajectory to develop into late successional or old-growth forests because of the lack of natural thinning once associated with low intensity fires. Frequent low intensity fires historically served as a thinning mechanism, thereby naturally regulating the density of the forests by killing unsuited and small trees. Bark beetles currently are thinning forests in the absence of fire. Ponderosa pine that thrive in fire prone environments are competing with more shade tolerant Douglas-fir or white fir species in the absence of fire. Trees growing at lower densities tend to be more fire-resistant and vigorous. Some populations of organisms that thrive in the more structurally diverse forests that large trees provide are becoming threatened.

Many forests have developed high tree densities and slower growth rates than historically after fire suppression became policy in about 1900. Trees facing such intense competition often become weakened and are highly susceptible to insect epidemics and tree pathogens. Younger trees (mostly conifers) contribute to stress and mortality of mature conifers and hardwoods. High density forests burn with increased intensity because of the unnaturally high fuel levels. High intensity fires can damage soils and often completely destroy riparian vegetation. Historically, low intensity fires often spared riparian areas, which reduced soil erosion and provided wildlife habitats following the event.

The absence of fire has had negative effects on grasslands, shrublands, and woodlands. Research in the last few decades has shown that many southern Oregon shrub and herbaceous plant species are either directly or indirectly fire-dependent.

Several shrub species are directly dependent on the heat from fires for germination; without fire, these stands of shrubs cannot be rejuvenated. Grass and forbs species may show increased seed production and/or germination associated with fire.

Indirectly, fire-dependent herbaceous species are crowded out by larger-statured and longer-lived woody species. This is particularly so for grasses and forbs within stands of wedgeleaf ceanothus and whiteleaf manzanita with a high canopy closure. High shrub canopy closure prevents herbaceous species from completing their life-cycle and producing viable seed. Many grass species may drop out of high canopy shrub lands in the absence of fire because of their relatively short-lived seed-bank.

Climate and topography combine to create the type of fire regime found in the Oregon Gulch RNA. Fire regime is a broad term and is described as the frequency, severity, and extent of fires occurring in an area (Agee 1990). Vegetation types are helpful in delineating different fire regimes. The Oregon Gulch RNA is classified as Low-Severity (68 percent) and Moderate-Severity (32 percent) fire regimes based on the vegetation types found within the RNA. The low-severity regime is characterized by vegetation types such as grasslands, shrublands, hardwoods, mixed hardwoods, and pine, which are similar to the Interior Valley Vegetative Zone of Franklin and Dyrness (1988). These plant communities are adapted to recover rapidly from fire and are directly or indirectly dependent on fire for their continued persistence. A low-severity regime is characterized by nearly continual summer drought; fires are frequent (1-25 years), burn with low intensity, and are widespread. The dominant trees within this regime are adapted to resist fire due to the thick bark they develop at a young age. The intermixture of pine-oak within the RNA suggests the fire return interval of about 10 years (Agee and Huff 2000). The moderate-severity regime is associated with the Mixed Conifer Vegetative Zone of Franklin and Dyrness (1988). A moderate-severity regime is characterized by long summer dry periods; fires are frequent (25-100 years), burn with different degrees of intensity, and burn in a mosaic pattern across the landscape. Some stand replacement fires as well as low-intensity fires may occur depending on burning conditions.

The Bureau of Land Management has a master cooperative fire protection agreement with the Oregon Department of Forestry (ODF). This agreement gives the responsibility of fire protection of all lands within the Oregon Gulch RNA to the ODF. This contract directs ODF to take immediate action to control and suppress all fires. Their primary objective is to minimize total acres burned while providing for fire fighter safety. The agreement requires ODF to control 94 percent of all fires before they exceed 10 acres in size.

Between the years 1967 and 1999, there were three fires within the Oregon Gulch RNA. All three fires were started by lightning and occurred in the years 1989, 1996 and 1999. Suppression action was taken by ODF resulting in two fires contained at 0.1 acre in size, while one fire was contained at one acre in size.

Currently, some fire suppression techniques are not allowed within the Oregon Gulch RNA, in order to minimize disturbance to the area. All vehicles are restricted to existing roads and the use of tractors is not allowed within the RNA.

Prescribed fire can be used to meet resource management objectives, which include but are not limited to, wildfire hazard reduction, restoration of desired vegetation conditions, management of habitat, and silvicultural treatments. When utilizing prescribed fire it should be based on the fire history of the area and past vegetation patterns known for the area. The application of prescribed fire should closely approximate the frequency, intensity, size, and the "natural" season of fire when possible.

Many factors influence fire behavior and the effects fire will have on a resource. Some are beyond our ability to control such as the location of where a fire starts, weather, and topography. Fuels management programs focus on those factors which can be influenced by humans, such as fuels and vegetation. Prescribed fire is one tool that can be utilized to regulate fuels and vegetation. A primary objective of any fuels management activity in the RNA is to alter existing fuels in order to protect or minimize damage to existing late-successional habitat from wildfires that may occur.

All prescribed burning would comply with the guidelines established by the Oregon Smoke Management Plan (OSMP) and the Visibility Protection Plan. In compliance with the Oregon Smoke Management Plan, any prescribed burning activities within the RNA require pre-burn registration of all prescribed burn locations with the Oregon State Forester. Registration includes specific location, size of burn, topographic, and fuel characteristics. Advisories or restrictions are received from the State Forester on a daily basis concerning smoke management and air quality conditions.

Prescribed burns would be conducted within the limits of a Burn Plan, which describes prescription parameters so that acceptable and desired effects are obtained.

Issues

- Limited access to and within the RNA.
- Restrictions against using large equipment in fire treatment or suppression activities.
- Constraints to season of prescribed burning due to air quality and fire season restrictions.
- Seasonal constraints due to growth period for rare plant species (Green's mariposa lily).
- Limited funding for repetitive treatments and restoration projects.
- Limited availability of native grass, forb, and shrub seed or seedlings for re-planting.

Management Actions

- Develop a fire management plan and memorandum of understanding for the entire RNA, coordinated between BLM and ODF, including a plan for prescribed burning.
- Use fire to enhance known sites of special status plant populations where applicable.
- Establish pre-burn plots in targeted plant communities to gather baseline data of
- vegetation species composition, density, etc,. to determine the effects of fire on affected plant communities.
- Through prescribed burning, reintroduce fire as a natural process, based on past fire regimes.
- Conduct post-project monitoring of plant communities to determine the effectiveness of management activities in achieving RNA goals. Adapt management activities as necessary.

Aquatic Ecosystems: Hydrology and Habitat

Policy/Agency Standards

Two major planning efforts have set the objectives for aquatic ecosystems. Objectives for water resources include compliance with State water quality requirements to restore and maintain water quality necessary to protect designated beneficial uses for the Klamath River Basin. In addition, the overall goal of the Aquatic Conservation Strategy (ACS) is to restore and maintain the ecological health of watersheds and aquatic ecosystems contained within them on public lands. Included in the ACS are specific goals:

- Maintain and restore the physical integrity of the aquatic system.
- Maintain and restore water quality necessary to support healthy riparian, aquatic, and wetland ecosystems.

- Maintain and restore the sediment regime under which aquatic ecosystems evolved.
- Maintain and restore the species composition and structural diversity of plant communities in riparian areas and wetlands to provide adequate summer and winter thermal regulation; nutrient filtering; appropriate rates of surface erosion; bank erosion and channel migration; and to supply amounts and distribution of coarse woody debris sufficient to sustain physical complexity and stability.
- Maintain and restore habitat to support well-distributed populations of native plant, invertebrate, and vertebrate riparian-dependent species.
- Maintain and restore a properly functioning watershed condition within the Oregon Gulch RNA.
- Maintain and restore the ecological health of aquatic ecosystems within the Oregon Gulch RNA.

Objectives

- Reduce or eliminate sediment input into streams and wetlands as disturbed areas regenerate.
- Reduce or eliminate surface disturbing activities such as roads/jeep trails.
- Restore and maintain native riparian vegetation along streams and springs/seeps.
- Achieve properly functioning riparian areas.
- Restore and maintain natural water flow (ground water and overland) into streams and spring/seeps.

Current Information

Hydrologic features in the Oregon Gulch RNA include intermittent streams (Oregon Gulch and unnamed tributaries), four known springs, and four constructed ponds. Current hydrologic condition of the RNA is unknown. A stream survey is necessary to determine if there are any watershed concerns affecting water quantity, water quality, or aquatic habitat. The Jenny Creek Watershed Assessment and Analysis (USDI 1995b) states that poor road location has created major problems for Oregon Gulch; however, no specific concerns are identified.

Although timber harvest or Off-highway vehicle (OHV) use is not allowed in the RNA, potential adverse impacts to the streams, springs and seeps could occur on BLM-administered lands as a result of erosion from existing or new roads, current grazing, or a severe wildfire. Approximately 532 acres of the Oregon Gulch drainage area are private lands that lie above the RNA. Management actions such as road building, timber harvest, burning, pesticide treatments, and livestock grazing on these private lands could negatively affect streamflows and water quality in the RNA. Sediment increases would be the most likely adverse impact associated with these types of activities.

Management Actions

- Conduct stream/riparian survey to determine waterbody category, current channel and riparian conditions, aquatic fauna habitat condition, and locations of unmapped waterbodies.
- Assess need for water/riparian monitoring based on stream/riparian survey results.
- Undertake restoration projects as needed to comply with the objectives of the Aquatic Conservation Strategy and to prevent further damage to hydrologic and ecological values.

Mining and Geothermal Resources

Mining and geothermal rights have been withdrawn within the Cascade-Siskiyou National Monument and are not an issue. There are no goals, objectives, or actions necessary for this resource.

Cultural Resources

Policy and Agency Standards

- Protect cultural resource values including information and significant sites for public and/or scientific use by present and future generations. Sites with significant values will be protected from management actions and from vandalism to the extent possible.
- Develop project plans to preserve, protect and enhance archeological, historical and traditional use sites, and materials under the district's jurisdiction. This would include protection from wildfires (USDA 1995).

Goals

Protect cultural resources at Oregon Gulch RNA from theft and human disturbance.

Current Information

Several cultural resource surveys have been conducted within the Oregon Gulch RNA. A number of both historic and pre-historic sites have been recorded both within and adjacent to the RNA.

Issues

The isolated location of the RNA makes enforcement of restrictions and protection of archeological sites difficult.

Management Actions

Protect sites as needed from management activities and vandalism.

Livestock Grazing

Policy and Agency Standards

- "Watersheds are in, or are making significant progress toward, properly functioning physical condition, including their upland, riparian-wetland, and aquatic components; soil and plant conditions support infiltration, soil moisture storage and the release of water that are in balance with climate and land-form and maintain or improve water quality, water quantity and the timing and duration of flow".... "Habitats are, or are making significant progress toward being restored or maintained for federal threatened and endangered species, federal proposed, category 1 and 2 federal candidates (Federal Species of Concern), and other special status species." (Fundamentals of Rangeland Health, 43 CFR 4180)
- "Habitats support healthy, productive and diverse populations and communities of native plants and animals (including special status species and species of local importance) appropriate to soil, climate, and landform." (Standard 5, Standards for Rangeland Health, USDI 1997)
- "Livestock grazing should be managed within RNAs to promote maintenance of the key characteristics for which the area is recognized." (USDI 1987. BLM Manual, RNAs, 1623.37)

Goals and Objectives

- Preserve natural features in as nearly an undisturbed state as possible for scientific and educational purposes. Natural processes should dominate, although deliberate manipulations that simulate natural processes are allowed in specific cases (USDI 1987).
- Maintain or improve the designated values of the RNA, especially native plant community composition and structure, soils, riparian areas, stream health and function, and nutrient cycling.

Current Information

Grazing in the area encompassed by the Oregon Gulch RNA dates back to the 1850s when large herds of cattle, horses, and sheep utilized the area. Control of these ranges did not occur until the passage of the Taylor Grazing Act in 1934. The long-term goal of this law was the improvement of range conditions and the stabilization of the western livestock industry. Prior to the enactment of the Taylor Grazing Act, unregulated grazing occurred. During this period rangeland resources and ecological conditions suffered significant harm from overgrazing.

The Oregon Gulch RNA is currently part of the Oregon Gulch Pasture of the Soda Mountain Allotment #10110. The pasture is utilized on alternative years under a rest-rotation grazing plan that includes the rest of Soda Mountain Allotment. Cattle numbers on the Soda Mountain Allotment have been reduced by 34 percent since the 1970s. Cattle generally utilize the RNA from June 1 into early July on alternating years. The current number of Animal Unit Months (AUMs) is 1,174. Utilization data within the Soda Mountain allotment shows overall utilization of the pasture to be 6 percent with portions of the pasture unused. Several range monitoring plots occur within the RNA. Past monitoring has shown slight utilization (21-40 percent) and moderate (41-60 percent) utilization in portions of the RNA.

The Oregon Gulch RNA contains significant areas of native grassland communities, especially in the Garry oak/wedgeleaf ceanothus/grass or scrubland, and the western juniper/Garry oak scrubland communities. Grasslands are also a component under the Garry oak/ponderosa pine communities and along the narrow riparian zone. In the RNA, large native herbivores (deer and elk) play an important evolutionary and ecological role. Different grazing animals vary in their foraging preferences, season, duration, and intensity of use, which can have significantly different effects on plant communities, particularly when considering introduced versus non-introduced species. Grazing modifies vegetation height, frequency, and density; influences vegetation composition and succession; and alters water retention and drainage characteristics. To plants, critical factors are the severity, frequency, duration, and seasonality of defoliation. These factors can be controlled through proper grazing management.

Livestock grazing could have a significant impact in Oregon Gulch RNA if not managed in a manner appropriate for the particular plant communities. Uncontrolled grazing by domestic livestock is not compatible with the maintenance of key RNA features; however, controlled grazing could offer an ecological management tool to maintain or improve the some of the biological features (e.g., grassland component) for which the RNA was established.

Exotic and noxious weed populations do occur in the RNA. With the exception of Medusa head rye (*Taeniatherum caput-medusae*), cheatgrass (*Bromus tectorum*), and bulbous bluegrass (*Poa bulbosa*), most weeds currently have overall low densities [Dyer's woad (*Isatis tinctoria)*, bull thistle (*Cirsium vulgare*), yellow alyssum (*Alyssum alyssoides*), and hedgehog dogtail (*Cynosurus echinatus*)]. Soil and vegetation disturbance from over-grazing could increase exotic plant densities, and affect the plant communities for which the RNA was established.

Issues

- Existing noxious weed populations that can increase as a result of soil disturbance from over-grazing or congregating livestock.
- Terms and conditions in the existing grazing lease may need to be modified to protect or maintain key elements in the RNA.
- Only a few utilization plots exist in the RNA. Other areas (e.g., riparian) have not had formal surveys documenting utilization or impacts. Several photo-points were recently established in the riparian area.

Management Actions

- Collect data in grassland/shrubland/riparian communities within the RNA as part of the ongoing livestock impact study within the monument. This information will determine if grazing is maintaining or enhancing key communities. Make recommendations on how to utilize grazing, if appropriate, as a tool to maintain these communities.
- Install additional monitoring plots in utilized areas within the RNA to ensure that grazing promotes maintenance or enhancement of key plant communities.

Timber Management

Policy and Agency Standards

Regulated timber harvest within the RNA and salvage removal of downed trees are not compatible with the RNA values. For RNAs adjacent to timber harvest units, buffer zones should be considered in order to meet plan objectives (USDI 1986).

Timber harvesting should be managed within RNAs to promote the maintenance of the key characteristics for which the area is recognized.

Current Information

Few trees have been removed in the past. A road runs east and west through the RNA. An occasional tree was removed during road construction. Timber harvesting in the RNA is not consistent with overall goals for the mixed conifer/black oak cell or for the ponderosa pine/white oak cell. An overstory removal occurred in private ownership in Section 30 during the summer of 2000 to the west, directly adjacent to the mixed conifer cell. Potentially, windthrow could occur during winter storms on the west boundary of the RNA. Private lands in Section 20 also abut the RNA to the north; few of the conifer communities are found here. No BLM sales are planned in the area, nor are any other forest stands adjacent to the RNA.

Timber harvesting in RNAs is not consistent with overall RNA management goals. However, non-merchantable Douglas-fir, less than 12” in diameter and less than 90-years old, should be removed and burned to reduce stand density and insect risk. These trees have become established in the absence of fire. Occasionally, individual trees larger than this will be girdled and/or felled when competing directly with individual mature sugar pine.

Goals and Objectives

Maintain viable ecosystem functions and protect RNA community cells from catastrophic disturbance events.

Management Actions Needed

- In conjunction with fuels treatments/understory burning, treat conifer stands to promote health of key communities.
- No commercial timber harvesting will occur in the RNA. All trees felled or girdled for forest health reasons will be left on site. Small diameter Douglas-fir will be cut and burned in order to reduce fuel hazard and beetle outbreak risk.

Public Use/Recreation

Policy and Agency Standards

Recreation, camping, wood cutting, trapping, plant gathering, and off-highway vehicle (OHV) use are not compatible with the key RNA values unless shown not to hinder achievement of specific plan objectives. Hunting and fishing activities are typically permitted, but camping associated with these uses is prohibited in RNAs (see Wildlife sub-section below).. Educational use such as class field studies is encouraged, but repetitive consumptive class activities are allowed only with BLM approval. Development of peripheral nature trails and interpretive signs may be appropriate in some cases, but with consideration for protection of the values without attracting undue attention. Public use roads, pipelines, communication sites, or power lines should avoid the RNA. Road closures or way closures or restrictions may be considered appropriate in some instances (see Rights of Way section) (USDI 1986). Equestrian use is not specifically prohibited in the RNA policies; however, use is generally felt to not be compatible with the overall goal of RNAs to "Preserve natural features in as nearly an undisturbed state as possible for scientific and educational purposes. Natural processes should dominate, although deliberate manipulations which simulate natural processes are allowed in specific cases." (USDI 1986).

Current Information

Recreational use in the Oregon Gulch RNA is mostly by hunters or local residents. The RNA was accessible by road until 1998 when the road was blocked to eliminate vehicle use of the area. The closed road now serves as a hiking trail. The entire RNA is closed to all off-road travel by motorized and mechanized vehicles.

Potential problems arising from public use of the RNA include the threat of human-caused stand-replacement fire; damage to grasses, forbs and soils by compaction from hikers; and the introduction of undesirable non-native species. Current recreational use is very light and low-impact. Periodic monitoring should be conducted to evaluate the impacts of recreational use on the protected plant communities and to determine if signs are necessary to protect against adverse effects.

Camping

Policy and Agency Standards

(See Public Use/Recreation)

Goals

- Protect designated values of the RNA.
- Educate the public to the ecological significance of the RNA and the restrictions required to protect the designated natural resources.

Current Information

No established camping facilities exist in Oregon Gulch RNA although dispersed camps were present when the road was open. Camping occurs seasonally at Randcore Pass, which is close to the RNA boundary. In general, camping is not compatible with protection of the key elements of the RNA. However, unless camper use becomes evident, no actions are needed at the present time. If it does become a problem, "no camping" signs could be posted around the RNA.

Issues

- Isolated location of the RNA and difficulty in enforcing restrictions.
- Historical use of the area.

Management Actions

- Conduct periodic monitoring to determine if camping has occurred that has had a negative impact on the protected elements.
- Promote environmentally sensitive use of area to visitors via education (signs and personal contact).

Hiking

Policy and Agency Standards

(See Public Use/Recreation)

Goals

- Protect designated values of the RNA.
- Educate the public to the ecological significance of the RNA and the restrictions required to protect the designated natural resources.

Current Information

The closed access road through the RNA is now an existing hiking trail. The RNA receives the greatest amount of foot traffic during the fall hunting season and, to a lesser extent, during spring turkey hunting season.

Features of the RNA that might appeal to hikers are wild flowers, wildlife, and diverse plant communities; however, the RNA is not well known or easily accessible to the general public. For these reasons, developing hiking trails or promoting the area as a recreational hiking destination would not be practical or recommended. Casual hiking itself does not pose a threat to the resources of the RNA. However, if done by a large number of people, native grasses and wild flowers could be trampled and destroyed and soils compacted, jeopardizing the integrity of the protected elements of the RNA.

Issues

- Isolated location of the RNA making enforcement of restrictions difficult.
- Historical use of the area.

Management Actions

- Conduct periodic monitoring to evaluate the extent and effects of hiker use.
- Promote environmentally sensitive use of area to visitors via education (signs and personal contact).

Equestrian Activities

Policy and Agency Standards

There are no specific BLM guidelines or policies restricting equestrian activities within RNAs. However, any activities should be avoided that threaten protection of the key elements for which the RNA has been designated (USDI 1987).

Goals

- Protect soils, vegetation, roads, streams and other resources from damage caused by equestrian use in the RNA.
- Educate the public to the ecological significance of the RNA and the restrictions required to protect the designated natural resources.

Current Information

Oregon Gulch RNA currently receives occasional equestrian use, probably by neighbors and the grazing allotment lessee involved with cattle ranching activities. Equestrian activities in this management plan refers to horses, llamas, mules, and other pack animals. Heavy use by recreational animals could threaten the values of the RNA by trampling vegetation and soil, particularly in meadows with thin, fragile soils, or by carrying in seeds of exotic weedy species on their hooves, hair, or in their feces. During wet conditions horses can push root crops (used by Indian tribes as food) too far into the soil to dig and use. The use of horses and other pack or riding stock is generally not seen as compatible with the key elements of the RNA. Incidental use by riders moving cattle is allowed under the grazing lease.

Issues

- Isolation of area and difficulty in enforcing closures or restrictions.
- Historical use in the area.

Management Actions

- Periodically monitor the RNA to ensure that horse or other stock use is not occurring.
- Promote environmentally sensitive use of area to visitors via education (signs and personal contact with equestrian groups).
- Post signs at entrances to the RNA, stating the goals of the RNA and closure to equestrian use.

Off-Highway Vehicles (OHVs)

Policy and Agency Standards

Management directions for all RNAs specify closure to off-highway vehicle (OHV) use. Off-highway vehicles include, but are not limited to, motorcycles, all-terrain vehicles, and mountain bikes.

Goals

- Prevent intrusions into the RNA by motorized and mechanized vehicles.
- Educate the public to the ecological significance of the RNA and the restrictions required to protect the designated natural resources.

Current Information

Oregon Gulch received some OHV use in the past, but recent road closures and blocking has eliminated most if not all motorized vehicle use within the RNA. OHV use is prohibited in RNAs because of the damage they cause to plant communities, individual plants and streams via erosion.

Issues

- Isolated location makes enforcing restrictions or road closures difficult.
- Historical use of the area.

Management Actions

- Conduct periodic monitoring to assess off-highway vehicle violations.
- Promote environmentally sensitive use of area to visitors via education (signs and personal contact).

Hunting, Fishing and Trapping

Policy and Agency Standards

(See also Public Use/Recreation)

Incidental hunting and fishing are typically permitted, although not encouraged, in RNAs, Trapping is viewed as an activity not consistent with RNAs (USDI 1986). Management of fish and wildlife populations is controlled by the Oregon Department of Fish and Wildlife (ODFW) with regulations for hunting, fishing, and trapping set on a yearly basis. Regulations regarding seasons, bag limits, stream stocking, licenses and techniques are dictated by the Department through the Fish and Wildlife Commission and are applicable on all lands within the state, including private property. Specific areas may be closed to activities in order to protect human life or natural resources.

Goals

Protect designated values of the RNA, including plant, soil, and wildlife resources with minimal disturbance and interference from people.

Current Information

Wildlife is abundant in Oregon Gulch RNA. Most of the RNA is very good deer hunting country and receives a fair amount of pressure, especially on the western edge where there is vehicle access right up to the edge of the RNA near Randcore Pass. Big game in the general area of the RNA consists of Black bear (*Ursus americanus*), Cougar (*Felis concolor*) and Black-tailed deer (*Odocoileus hemionus columbianus*). Elk (*Cervus canadensis*) also use the RNA seasonally. Small game species in the general area include Ruffed grouse (*Bonasa umbellus*), Blue Grouse (*Dendragapus obscurus*), Wild Turkey (*Meleagris gallopavo*), Mountain Quail (*Oreortyx pictus*), Valley Quail (*Callipepla californicus*), Western Grey squirrel (*Sciurus griseus*). It is unknown what, if any, trapping activity is occurring in this area. There is no indication that any trapping currently occurs. Fur-bearing species in the area include Bobcat (*Felix rufus*), Coyote (*Canis latrans*), Raccoon (*Procyon lotor*), and Grey fox (*Urocyon cinereoargenteus*), and possibly Pine Marten (*Martes americanus*). Redband trout (*Oncorhynchus mykiss ssp.*) appear to spawn in the lower mile of Oregon Gulch, because trout fry have been found throughout this stretch of stream. Fish use of Oregon Gulch appears to be limited by a natural barrier just inside the RNA boundary (see Fish Section).

Issues

- Dispersed camping and OHV use are often associated with hunting and could negatively impact RNA resources if these activities occur illegally.
- The isolation of the area makes enforcing restrictions difficult.
- Historical use of the area.
- Prohibition of hunting and trapping in the RNA would require a change to the Oregon State Game Regulations and would be difficult to enforce due to unclear boundaries (on the ground).
- Minimal impact to wildlife populations in the area. No impact to the values for which the RNA was designated.

Management Actions

- Restrict hunting and trapping to foot traffic only; no vehicles or stock use.
- Prevent intrusions into the RNA by motorized and mechanized vehicles.
- Educate the public to the ecological significance of the RNA and the restrictions required to protect the designated natural resources.

Special Forest Products

Policy and Agency Standards

Commercial or personal harvest of Special Forest Products (SFPs) within RNAs, such as boughs, burls, fungi, medicinal plants, etc., are not compatible with the overall goals to "Preserve natural features in as nearly an undisturbed state as possible for scientific and educational purposes. Natural processes should dominate, although deliberate manipulations which simulate natural processes are allowed in specific cases."(USDI 1987).

Current Information

No use permits are currently issued for this area. Historical personal use within this area is not well documented. No information is available to determine the abundance of SFPs within the RNA. Future research within the RNA may require the collection of certain animal and plant specimens.

Issues

- The isolation of the area makes enforcing SFP collection restrictions difficult.

Management Action

- Prohibit any commercial or personal use collection of Special Forest Products within the RNA. Permits for collection of specimens for research will be allowed on a case-by-case basis.
- Educate the public as to the ecological significance of the RNA and the restrictions required to protect the designated natural resources.

Interpretation and Research

Policy and Agency Standards

The purpose for RNAs is for research, observation, and study. Studies involving manipulations of environmental or vegetation characteristics or plant harvest must have prior approval of the BLM.

Goals

- Protect the designated values for which the RNA was nominated to provide baseline information against which the effects of human activities in other areas may be compared.
- Provide a site for study of natural processes in as undisturbed (by human activities) an ecosystem as possible.

Current Information

Oregon Gulch RNA is only accessible on foot, which protects it from overuse by the public, but also makes it impractical as an interpretive or educational site. One of the main objectives for RNAs is to provide educational and research areas for ecological and environmental studies. The following specific research topics have been suggested for Oregon Gulch:

- Evaluating the effects and the role of domestic livestock grazing on key elements in the RNA (plant communities, butterflies, and rare plant species) as part of the ongoing grazing study.
- The role of fire in plant and animal community development, composition, and production.

Other potential areas for research include the effectiveness of prescribed fire and seeding of native species in reducing non-native plant species, and studies of the effects of prescribed fire or vegetative manipulation on plant community composition, insects, wildlife, or special status plant populations.

When researchers plan to use an area, they have certain obligations to:

1. notify the appropriate BLM field office, submit a research plan, and obtain permission where needed;
2. abide by regulations and management prescriptions applicable to the natural area; and,
3. inform the agency of the research progress, published results, and disposition of collected materials. (USDI 1986)

Issues

- Lack of funding for treatments in RNA's
- Impacts from surrounding land use activities.

Management Actions

- Evaluate all proposed research projects and approve only those that will not adversely affect the RNA's resources or short- and long-term viability of species.
- Maintain a list of projects and research in the RNA, including findings and conclusions.
- Incorporate pertinent new findings from research projects into management actions.
- Maintain copies of all surveys, inventories, monitoring, and activities conducted within the RNA.

MONITORING

Definition and Role of Monitoring

Monitoring is defined as a process of repeated recording or sampling of similar information for comparison to a reference. The role of monitoring in Research Natural Areas (RNA) is to collect information in order to evaluate if objectives and anticipated or assumed results of a management plan and management actions are being realized or if implementation is proceeding as planned. Because monitoring may be so costly as to be prohibitive, priority should be given to monitoring mandated by legislation and to focusing on management actions aimed at maintaining, protecting and restoring key elements, and to minimizing disturbance in the RNA (USDI 1995a). All monitoring activities must include the following steps:

- Establish monitoring objectives.
- Collect baseline information.
- Repeat consistent standardized monitoring procedures over time.
- Interpret monitoring results relative to the baseline information and monitoring and implementation objectives.
- Modify management objective actions and monitoring procedures as necessary based on reliable monitoring data to continue to achieve goals of the RNA.

The monitoring plan should be tailored to the unique characteristics of the RNA. Two types of monitoring activities are outlined below. Ecological status monitoring is designed to track the ecological condition of the natural elements protected within the RNA. Defensibility monitoring should detect impacts from outside factors on the protected elements in the RNA. These monitoring activities are general in nature and should not be used in lieu of more complex research strategies. Detailed monitoring protocols should also be developed in conjunction with specific management projects to measure their effectiveness in achieving RNA objectives. For each element, monitoring objectives, unit and frequency of measurement, responsible personnel, and location for data storage are stated.

Ecological Status Monitoring

Ecological status monitoring involves tracking species and plant communities relative to the stated objectives of the RNA. Ecological status monitoring at Oregon Gulch RNA should assess the current status of RNA elements and track trends or changes over time to determine if any RNA values are at risk. Monitoring results provide the basis for evaluating the effectiveness of management actions and determining if changes are required. Where possible, monitoring within the RNA should be tiered to the monitoring for the Cascade-Siskiyou National Monument.

Element: Plant Associations

Monitoring Objectives: Track successional changes in the key RNA plant associations or communities to determine if native species are protected, if ecological processes are properly functioning, and if RNA management actions are achieving desired outcomes. Information collected during monitoring provides the basis for making adjustments to management actions.

Frequency of Measurement: After initial baseline, every 5 years.

Responsible Personnel: Botanists, Ecologists, Foresters

Data Storage: Oregon Gulch RNA File

Element: Special Status Plants

Monitoring Objectives: Perform formal surveys of the RNA for Bureau Special Status Plants. Monitor populations of special status plants in order to maintain or enhance populations and associated habitats. Utilize the RNA to collect base-line biological data for sensitive species. Evaluate effects from grazing on Green's mariposa lily.

Unit of Measure: Revisit known sites and record population demographics on site reports. As part of the grazing study include monitoring of Green's mariposa lily.

Frequency of Measurement: Revisit known sites of special status plants every 5 years.

Responsible Personnel: Botanists

Data Storage: Oregon Gulch RNA File, Medford Rare Plant Database

Element: Special Status Wildlife

Monitoring Objectives: Perform surveys for Special Status Wildlife species and monitor species within the RNA in order to maintain or enhance populations.

Unit of Measure: Determined by established protocols for specific species.

Frequency of Measurement: According to established protocols.

Responsible Personnel: Field Office Lead Wildlife Biologist

Data Storage: Oregon Gulch RNA File, Wildlife database

Element: Fire

Monitoring Objectives: Determine the need to restored key plant communities using prescribed fire. Perform fuel surveys in key plant communities following established protocols. Monitor following prescribed burning results.

Unit of Measure: Determined by established wildland burning protocols.

Frequency of Measurement: According to established protocols.

Responsible Personnel: Prescribed fire specialists

Data Storage: Oregon Gulch RNA File, Fire database

Element: Non-Native Species

Monitoring Objectives: Assess the need for management actions to reduce or minimize the impact, introduction and/or spread of non-native weedy species. Identify problem areas. Collect baseline data. Non-native species of concern include all currently identified noxious and exotic weeds known within the Monument and in the adjacent watersheds.

Unit of Measure: Presence/absence and abundance of non-native weedy species by random surveys. Target highly susceptible points of invasion (along borders and roads).

Frequency of Measure: Every 5 years; casual observations during other site visits.

Responsible Personnel: Botanists, Range Specialists, Ecologists

Data Storage: Oregon Gulch RNA File, Medford District Noxious Weed Database

Element: Insects, Diseases Or Pests

Monitoring Objectives: Monitor harmful insects, diseases, or pests that could cause long-term negative changes in plant communities, especially the mixed conifer/California black oak community. Determine if treatments are needed to reduce the negative effects of these insects, diseases, or pests.

Unit of Measure: Periodic evaluation of the RNA to discover presence/absence and extent of harmful insects, diseases or pests. Initial evaluations may be accomplished by walking through the RNA, or through photo interpretation.

Frequency of Measurement: Every 5 years or as needed based on casual observations during other site visits.

Responsible Personnel: Foresters, Ecologists

Data Storage: Oregon Gulch RNA File, Southwest Oregon Insect and Disease Center if appropriate.

Element: Hydrology

Monitoring Objectives: Evaluate hydrological conditions (channel stability, erosion, sedimentation, slumping potential, etc.) and riparian vegetation of all streams to determine the functioning condition and need for habitat improvement or restoration activities. Monitor the influence of grazing on riparian vegetation as part of the three-year grazing study.

Unit of Measure: Established riparian stream survey protocols.

Frequency of Measurement: Establish baseline, then every 10 years.

Responsible Personnel: Hydrologist/Riparian Coordinator

Data Storage: Oregon Gulch RNA File, Riparian Database

Element: Natural Disturbance

Monitoring Objectives: Document type, extent, intensity, and frequency of natural disturbances in the RNA and resulting changes in ecosystem structure or composition.

Unit of Measure: Intuitively controlled surveys after disturbance, photos of affected plant communities or areas.

Frequency of Measurement: After significant disturbance, wildfires, landslides, insect and disease outbreaks.

Responsible Personnel: Botanist, Ecologist and Foresters

Data Storage: Oregon Gulch RNA File

Defensibility Monitoring

Defensibility monitoring involves on-the-ground assessment of factors that affect the manager's ability to protect the Research Natural Area and its elements. Considered are current and anticipated land uses within and adjacent to the RNA and their potential negative effects on the protected elements or their governing ecological processes. Defensibility monitoring also involves checking for evidence of prohibited use, encroachment or degradation within the RNA.

Element: Cultural Resources

Monitoring Objectives: Detect vandalism or disturbance to known archeological or historical sites at the RNA.

Unit of Measure: Visual assessment to detect evidence of disturbance.

Frequency of Measurement: Every 5 years or as needed based on observations during periodic site visits.

Responsible Personnel: Cultural Resource Manager/ Archaeologist

Data Storage: Oregon Gulch RNA File, District Archaeology files

Element: Public Use Of RNA

(camping, hiking, equestrian, trapping, OHVs, special forest products, interpretation and research, trespass livestock grazing, timber harvesting).

Monitoring Objectives: Determine if the level of public use jeopardizes protection of RNA values or key elements.

Unit of Measure: Observations made during other surveys or during periodic site visits. Indications of problem areas include evidence of vehicular use (on or off existing roads in the RNA), refuse, signs of campfires or campsites, trampled meadows, significant erosion or rutting on or off roads. If problems are noted during casual visits to the site, conduct more extensive surveys to determine if actions should be taken to prevent damage to the protected elements.

Frequency Measurement: Every 5 years.

Responsible Personnel: RNA Coordinator

Data Storage: Oregon Gulch RNA file

Element: Roads

Monitoring Objectives: Determine condition of roads, track erosion and gullying of road surfaces.

Unit of Measure: Subjective evaluation by knowledgeable personnel. Establishment of photo-points of marginal spots to compare condition over time.

Frequency of Measurement: Every 5 years during periodic site-evaluation visits to the RNA.

Responsible Personnel: RNA Coordinator, Road Engineers

Data Storage: Oregon Gulch RNA file

Element: Fences and Gates

Monitoring Objectives: Determine if existing fences and gates adequately protect the RNAs elements. If not, determine if repairs, additional fencing, or gates are needed.

Unit of Measure: Walk fence lines to discover broken fences.

Frequency of Measurement: Every 5 years or as needed if trespass grazing or excessive OHV use is observed during other visits to the site.

Responsible Personnel: Rangeland Specialists, Road Engineers

Data Storage: Oregon Gulch RNA file

Element: Grazing

Monitoring Objectives: Determine if permitted grazing is maintaining or enhancing key plant community elements within the RNA, including Special Status Plants. Meet the intent of the overall goals for the RNA. Adjust grazing permit accordingly.

Unit of Measure: Establishment of monitoring plots following standardized protocols in livestock utilized plant communities (grasslands/riparian) within the RNA. Where possible, monitor grazing in conjunction with plant community and Special Status plant monitoring plots. Establish photo-points in areas of concern to compare condition over time.

Frequency of Measurement: Monitor for three years as part of the monument grazing study. Monitor utilization transects every year that livestock use the RNA.

Responsible Personnel: Ecologists, Range Specialists, Botanists

Data Storage: Oregon Gulch RNA file

Historical Attachment for Oregon Gulch RNA

Recollections of George Wright:

March 3, 1954, THE WITCHERLY RANCH, 666

"It was probably around 1923 when Louis Miller located his homestead at Apple Jack along Jenny Creek. Later he bought George A. Grieve's homestead on the north, and located a grazing homestead joining on the west."

Miller sold his holdings in about 1943 and it's changed hands several times since. "Bert" Dodendoaph bought it from Miller, but about three months [later], sold it to Jesse B. Kidwell, who had it for a few years, in which time he sold the timber and it was logged off, and then sold to Jack Stoddard, and after a year or two, Stoddard sold to a man by the name of Witcherly, and in another year or two sold to George W. McCullum, however, it still seems to go by the name of the Witcherly Ranch.

March 4, 1954, OREGON GULCH, 669

"I don't know how Oregon Gulch got its name. It runs into Jenny Creek on the ranch now owned by George McCullum, but is still called the Witcherly Ranch and heads west from Jenny Creek about two miles, on the east end of Skookum [Keene Creek Ridge] Ridge.

There are several place names in the Oregon Gulch area, Bark Spring about one half mile on the hill north of Oregon Gulch, and near Rose Bud, Shady Spring is on the south side, and so is Smith's Camp. Root Spring and Valentine Spring is in the south head part, while Rancour's Homestead and Shake Spring is in the north head part, and in the divide that slopes toward Kein [Keene] Creek. The Shake Road, which is usually called the Oregon Gulch Road, these days, goes through the head of Oregon Gulch, by Root Spring and Rancour's Homestead.

March 7, 1954, SHADY SPRING, 670

South of Oregon Gulch about a quarter of a mile or less, is a spring located in a timbered place, and sort of a pretty place.

It was about 1921 when Roy Hartwell, his father and myself camped there for a few days and made some shakes. During the many years that I was ranger rider for the Pilot Rock Grazing District I salted cattle there.

From the obsidian chips scattered around there shows the place was the camping place for the Indians before the white man came.

The spring didn't have any name till about twenty-five years ago, when Con G. Mulloy and myself were discussing the range and place names, and Mulloy suggested that the spring should have a name, and that Shady Spring would be a good name, because of the shady place where the spring is located, and I agreed.

March 7, 1954, SMITH'S CAMP, 671

Near the upper south part of Oregon Gulch, a man by the name of Smith located a timber claim, or homestead, probably in 1908 or before. He built a log cabin and lived there some, and made a lot of posts, and sold them to D. Marshall Horn, of Hornbrook, California. Horn hauled the posts to his ranch with teams or wagons, with four or more horses to the wagon, as was customary with long teams in the early days, they had bells on their hames [part of the harness] which was there to serve about the same purpose as the horns did on the early automobiles, on narrow and crooked roads.

The cabin burned many years ago, and the spot has grown up with trees and brush till it don't look like anyone has ever lived there, and the name Smith's Camp has been almost forgotten.

March 8, 1954, ROOT SPRING, 672

In the head of Oregon Gulch by the side of the Shake Road is a spring that's been known as Root Spring, as far back as I can remember. The spring was well named, for there is a tanglement of roots around the edge of the spring.

About twenty-five years ago the cattlemen of this area sort of boxed the spring in to make it a better place for the cattle to drink water, and three years ago, some other cattlemen re-boxed the spring with new logs in the same manner.

I about 1916 Thos. J Hearn and I camped there and made a few shakes near Shake Spring about a half mile northward, also about the same place and made shakes.

Root Spring is a well-known name place among the Cattlemen of this area.

March 7, 1954, BARK SPRING, 673

It was a long time ago when a little group of riders of the range dismounted from their horses at a spring a little west of Rose Bud not far from Oregon Gulch. One of the riders, Robert Bruce Grieve cleaned the leaves and mud out of the nice cold spring and from a piece of bark from a tree he placed there for the water to run out in, hence the name, Bark Spring, which is still a popular name among cattlemen of the area.

As far back as I can remember there has been a little log cabin there, probably someone's timber claim taken before my time.

March 8, 1954, VALENTINE SPRING, 674

Many new calendars have been hung on the wall, probably about seventy of them, since a little group of buckaroos rode up to a little spring in the head of Oregon Gulch. Included in this group was Valentine Griffith, my uncle, Wm. A. Wright, and my father, Thos. J. Wright. It was a dry and hot summer day, and they wanted a drink of water. Griffith cleaned the leaves and mud from the spring, and they soon had a drink of water.

Griffith passed on a dozen or so years ago at the age of 86 years. Even in such a short space of time, and as well known as he was in this region, as a buckaroo of the days of old, the name Griffith is being forgotten as time goes by, but his given name, Valentine, still lives among the buckaroos of today, as Valentine's Spring, but few, in any, know how the spring got its name.

March 8, 1954, CEDAR SPRING, 675

On the east end of Skookum Ridge, on the south slope, a nice spring comes out of the earth in a cluster of cedar trees, hence the name Cedar Spring, a name well known among the cattlemen.

March 9, 1954, RANCOUR'S HOMESTEAD, 676

During the mid-1920s, Ireane Wehhli, a young lady of Ashland, 43 Oregon, located a homestead in the head of Oregon Gulch at Shake Spring and built a little log cabin there. After a year of two she gave it up. In about 1931, George Rancour established his homestead there in the same place, and built a nice, three-room house from logs. He and Mrs. Rancour lived there for about three years during the summer months. After he got his homestead patent he sold the timber, and the place was then logged off. At this time they built a road from Kein Creek, which connected with the Shake Road to haul logs out on. A year or two later, Wade H. Wallis acquired the homestead. After a few years Wallis traded it to the United States government, for some land joining his ranch along Jenny Creek.

That was a beautiful place before it was logged off. It is, however, growing up again, so it don't look as bad as it did.

There used to be some fine timber on the place, and in earlier years there were lots of shakes made from the sugar pine trees. Shake Springs is located there, which was usually the camping place of the people while they were making shakes. The shakes were hauled by team and wagons over the Shake Road to their ranches and homesteads.

March 10, 1954, SHAKE SPRING, 677

Up till the mid 1930s the end of the road going north to Oregon Gulch, known as the Shake Road, ended at Shake Spring. In the mid-1930s a logging road was built from Kein Creek, to Shake Spring, or Rancour's Homestead, and connected on the Shake Road.

Shake Spring was the camping place for ranchers and homesteaders in the early days, while they were making shakes to cover their buildings with. Shake Springs was located in the timber and was a pretty spot to camp. In about 1916, I camped there with Thos. J. Hearn and made some shakes, and a little later, Walter Herzog and I camped there and make shakes. At this time Herzog went hunting, and killed a deer, and of course, killed it to eat. He made one of his favorite mulligan stews, in it was several different kinds of vegetables, and the parts of the deer, liver, lungs, kidney, heart and brains went in too. That was his way of making stew, cooked in an old iron kettle over a camp fire, it was a pretty good stew. Herzog was a good game shot with his old 38-55 Ballard single shot rifle.

Also during the early 1920s Roy Hartwell, his father, and I camped there and made shakes.

I believe it was in 1888 when Mr. and Mrs. Thos. J. Hearn were camping at Shake Springs to make shakes. With their little baby daughter in her cradle at camp, they left for an hour or two a few hundred yards away to make shakes, and while returning on a cattle trail they saw the tracks of a cougar made minutes before, heading for camp. They hurried to camp and found the baby unharmed, although the cougar tracks were within a few feet of the cradle holding their baby daughter.

May 15, 1954, ROSE BUD, 684

Rose Bud is a large knoll, or sort of a butte, west of what used to be the Wallis Ranch. There is quiet a lot of bluffy places on the south and east sides.

A number of years ago John H. Miller reported finding a rattlesnake den there in the rocks while he was hunting deer. No wonder, for it is an ideal place for rattlesnake dens.

I don't know how the place got its name. Its been called Rose Bud as far back as I can remember, however, in late years, some people call it Rose Bush."

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APPENDIX N

Special Status Species

SPECIAL STATUS PLANT SPECIES

The monument's unique geology, climate, and topography contribute to the presence of many rare and endemic plants. The region including and surrounding the monument has one of the highest rates of plant endemism in the United States (The Nature Conservancy 2000). The monument contains known populations of 33 plant species that are on the current Special Status Species list (Table N-1), including Gentner's fritillary, which is listed as threatened under the Endangered Species Act.

Occurrences of special species plants are documented in grasslands, chaparral, oak woodlands, conifer communities, rocky openings, vernal pools, seeps, and riparian areas within the Diversity Emphasis Area (DEA) and in the Old-Growth Emphasis Area (OGEA). Open grasslands, chaparral and oak woodlands, and conifer communities blend into a mosaic on the landscape, providing a diversity of habitats for groups of special species plants. As a result, many of these communities are spread out across the landscape.

Some special status species are known for fairly specific habitats: California milkvetch (*Astragalus californicus*) occurs only in open grasslands; the rare fungi *Plectani milleri,* and *Bondarzewia mesenterica* occur only in white fir communities; Coralseed popcorn flower (*Plagiobothrys figuratus* spp. *corallicarpus*) is found only in vernal pools and meadows; and a terrestrial orchid, clustered lady's slipper (*Cypripedium fasciculatum*), is found in old growth Douglas-fir in the monument, often under older madrone and canyon live oak. Other special status plant species can be found in several different types of communities, or are found in transitional zones between different community types. Species like Gentner's fritillary is known from mixed evergreen, oak woodlands, and chaparral and grassland edges. Green's mariposa lily (*Calochortus greeni*) can be found in Oregon white oak-western juniper/wedgeleaf ceanothus-klamath plum communities, Ponderosa pine-white oak/savanna , and on the margin of open grasslands in heavy clay soils (now often dominated by annual grasses). Some species occur in microsites within larger, more discrete communities. Special status plant species like *Nemacladus capillaris, Monardella glauca* and *Hieracium greenei* are documented in "rocky openings" within many different community types. Thus, management activities within grasslands, riparian areas, oak woodlands, mixed conifer and old growth conifer communities have the potential to influence special status plant species.

In 2004, the Oregon Natural Heritage Program re-evaluated all rare Oregon plants and fungi. A few species documented for the monument were dropped, and no longer have ONHP or Bureau status. These species were left on the following table for reference as they are still found in the Cascade-Siskiyou National Monument.

Table N-1. Overview of Current Special Status Plant Species within the CSNM.

BS=Bureau Sensitive BA=Bureau Assessment BT=Bureau Tracking FE=Federally Endangered

Species	Status	Habitat	Emphasis Area	Number Sites[1]	Documented Individuals
Astragalus californicus (California milk-vetch)	BA	Grassland	DEA	15	972
Asarum wagneri (green-flowered ginger)	BT	Moist conifer	OGEA	1	Unknown
Boletus pulcherrimus	BS	White fir	OGEA	1	Unknown
Bondarzewia mesenterica (Bondarzew's polypore)	Dropped	White fir	OGEA	1	Unknown
Calochortus greenei (Green's mariposa lily)	BS	Oak woodlands – chaparral	DEA	110[2]	13,355
Carex livida (livid sedge)	BA	Riparian – meadow	DEA	1	20
Carex praticola (meadow sedge)	BT	Riparian – wet meadow	DEA	1	45
Carex serratodens (two-tooth sedge)	BA	Riparian – wet meadow	DEA	1	30
Cirsium ciliolatum (Ashland thistle)	BS	Grasslands – oak woodlands	DEA	18	10,327
Cypripedium fasciculatum (clustered lady's slipper)	BA	Mixed conifer	OGEA	2	48
Cypripedium montanum (mountain lady's slipper)	BT	Mixed conifer – evergreen – oak woodland	OGEA DEA	10	246
Delphinium nudicale (red larkspur)	BA	Rock outcrop	OGEA	1	10,000
Fritillaria gentneri (Gentner's fritillary)	FE	Mixed conifer – oak woodland – mountain mahogany chaparral	DEA	22	368
Fritillaria glauca (Siskiyou fritillary)	BA	Dry, open, rocky ridgeline with mountain mahogany	DEA	7	315
Hackelia bella (greater showy stickseed)	BA	Riparian – grassy meadows – openings in white fir	OGEA	23	896
Hieracium greenei (Greene's hawkweed)	BT	Dry, open, ponderosa pine ridgelines	DEA	1	7
Iliamna bakeri (Baker's wild hollyhock)	BS	White fir openings	OGEA	4	9
Enemion stipitatum [Isopyrum stipitatum] (Siskiyou false rue- anemone)	BT	Grasslands – oak woodlands with ceanothus	DEA	28	177,530
Lathyrus lanzwertii tracyi (Tracy's peavine)	BT	Oak woodland – mountain mahogany chaparral	DEA	3	64
Limnanthes floccosa bellingeriana (Bellinger's meadowfoam)	BS	Wet meadows – vernal pools	DEA (moist meadows in OGEA)	11	16,151

Table N-1. Overview of Current Special Status Plant Species within the CSNM.

BS=Bureau Sensitive **BA**=Bureau Assessment **BT**=Bureau Tracking **FE**=Federally Endangered

Species	Status	Habitat	Emphasis Area	Number Sites[1]	Documented Individuals
Mimulus kelloggii (Kellogg's monkeyflower)	BT	Moist microsites in oak woodland	DEA	1	100
Microseris laciniata detlingii (Detling's silverpuffs)	BS	Grasslands – oak woodlands	DEA	21	2,212,193
Monardella glauca (pale monardella)	BT	Open mixed conifer – rocky openings	OGEA	1	Unknown
Nemacladus capillaris (common threadplant)	BA	Rocky openings in mixed conifer	OGEA	4	4,705
Perideridia howellii (Howell's false-caraway)	Dropped	Wet meadows, moist slopes, riparian	DEA OGEA	11	101,034
Plagiobothrys austinae (Austin's popcorn flower)	BA	Grassy meadows – vernal pools	DEA	1	10
Plagiobothrys figuratus corallicarpus (coral seeded popcorn flower)	BS	Grassy meadows – vernal pools	DEA	4	14,500
Plectania milleri (Miller's cup fungus)	BT	White fir	OGEA	4	Unknown
Poa rhizomata (rhizome bluegrass)	BA	Grasslands – oak woodlands	DEA	10	3,340
Ranunculus austro-oreganus (southern Oregon buttercup)	BS	Grasslands – oak woodlands – chaparral	DEA	1	2,000
Ribes inerme klamathense (Klamath gooseberry)	BT	Riparian – moist meadow edge	DEA	3	25
Solanum parishii (Parish's nightshade)	BA	Oak – pine woodlands – chaparral	DEA	3	20
Tremiscus helvelliodes	Dropped	White fir	OGEA	1	Unknown

[1] Based on 2004 data from the BLM Medford Rare Plant Database

[2] Does not include 20 new sites documented in 2003 by non-government surveys that report to have over 3,000 plants.

SPECIAL STATUS ANIMAL SPECIES - TERRESTRIAL WILDLIFE

The diverse plant communities, varied topography, and broad range of climatic zones come together to foster a diverse assemblage of terrestrial wildlife species. The monument is home to 44 animal species that are on the current special status species list (Table N-2).

Some special status animal species occupy well-defined habitat areas (e.g. Oregon spotted frog (*Rana pretiosa*) occurs only in association with ponds or lakes). Other species range widely across the landscape, utilizing a variety of habitats. For example, great gray owls (*Strix nebulosa*) choose nest sites in late-successional and old-growth conifer stands while foraging in meadows and other open areas, as well as traveling 10 miles or more and utilizing a variety of habitat including oak savannah, and mixed conifer.

Management activities across all habitat types have the potential to affect terrestrial wildlife species.

Table N-2. Terrestrial Wildlife Species Documented or Likely to Occur in the CSNM.

Species	Status
Acorn Woodpecker *Melanerpes formicivorus*	Bureau Tracking
American Peregrine Falcon *Falco peregrinus anatum*	Bureau Sensitive
American Marten *Martes Americana*	Bureau Tracking
Bald Eagle *Haliaeetus leucocephalus*	Federally Threatened
Band-tailed Pigeon *Columba fasciata*	Bureau Tracking
Black Salamander *Aneides flavipunctatus*	Bureau Assessment
California Mountain Kingsnake *Lampropeltis zonata*	Bureau Tracking
California Myotis *Myotis californicus*	Bureau Tracking
Cascade Frog *Rana cascadae*	Bureau Tracking
Common Kingsnake *Lampropeltis getula*	Bureau Tracking
Common Nighthawk *Chordeiles minor*	Bureau Tracking
Coronis Fritallary Butterfly *Speyeria coronis coronis*	Bureau Tracking
Fisher *Martes pennanti pacifica*	Federal Candidate
Flammulated Owl *Otus flammeolus*	Bureau Sensitive
Foothill Yellow-legged Frog *Rana boylii*	Bureau Assessment
Fringed Myotis *Myotis thysanodes*	Bureau Assessment
Great Gray Owl *Strix nebulosa*	Bureau Tracking

Table N-2. Terrestrial Wildlife Species Documented or Likely to Occur in the CSNM.

Species	Status
Greater Sandhill Crane *Grus Canadensis*	Bureau Tracking
Hoary Bat *Laiurus cinereus*	Bureau Tracking
Klamath Mardon Skipper *Polites mardon klamathensis*	Federal Candidate
Lewis' Woodpecker *Melanerpes lewis*	Bureau Sensitive
Long-eared Myotis *Myotis evotis*	Bureau Tracking
Long-legged Myotis *Myotis volans*	Bureau Tracking
Mountain Quail *Oreortyx pictus*	Bureau Tracking
Northern Goshawk *Accipiter gentilis*	Bureau Sensitive
Northern Pygmy Owl *Glaucidium gnoma*	Bureau Tracking
Northern Sagebrush Lizard *Sceloporus graciosus graciosus*	Bureau Tracking
Northern Spotted Owl *Strix occidentalis caurina*	Federally Threatened
Northwestern Pond Turtle *Clemmys marmorata marmorata*	Bureau Sensitive
Olive-sided Flycatcher *Contopus cooperi*	Bureau Tracking
Oregon Shoulderband *Helminthoglypta hertleini*	Bureau Sensitive
Pacific Pallid Bat *Antrozous pallidus pacificus*	Bureau Assessment
Pileated Woodpecker *Dryocopus pileatus*	Bureau Tracking
Pygmy Nuthatch *Sitta pygmaea*	Bureau Tracking
Ringtail *Bassariscus astutus*	Bureau Tracking
Silver-haired Bat *Lasionycteris noctivagans*	Bureau Tracking
Spotted Frog *Rana pretiosa*	Federal Candidate
Townsend's Big-eared Bat *Corinorhynus townsendii*	Bureau Sensitive
Western Bluebird *Siala mexicana*	Bureau Tracking
Western Gray Squirrel *Sciurus griseus*	Bureau Tracking
Western Meadowlark *Stunella neglecta*	Bureau Tracking

Table N-2. Terrestrial Wildlife Species Documented or Likely to Occur in the CSNM.

Species	Status
Western Toad *Bufo boreas*	BT
White-headed Woodpecker *Dendrocopos albolarvatus*	BS
Willow Flycatcher *Empidonax traillii adastus*	BT
Yuma Myotis *Myotis yumanensis*	BT

SPECIAL STATUS ANIMAL SPECIES – AQUATIC WILDLIFE

The monument is home to a variety of aquatic organisms including several special status species: Jenny Creek redband trout (*Oncorhynchus mykiss spp.*) a BLM special status species, Jenny Creek sucker (*Catostomus rimiculus*) a BLM special status species, and Fredenberg pebblesnail (*Fluminicola n. sp. 17*), Nerite pebblesnail (*Fluminicola n. sp. 10*), Toothed pebblesnail (*Fluminicola n. sp. 11*), Diminutive Pebblesnail (*Fluminicola n. sp. 12*), Fall Creek pebblesnail (*Fluminicola n. sp. 14*), Keene Creek pebblesnail (*Fluminicola n. sp. 16*), all Bureau Sensitive Species in Oregon.

APPENDIX O

Fire Suppression Tactics

During suppression activities on all BLM lands within the Cascade-Siskiyou National Monument (CSNM) the following guidelines would be followed:

- BLM resource advisors will be dispatched to all fires that occur on BLM land. These resource advisors are utilized to ensure that suppression forces are aware of all sensitive areas and to ensure a minimum of damage to resources as a result of suppression efforts.
- During fire suppression activities it may be necessary to open decommissioned roads or construct roads with a dozer. Where emergency actions are required for fire suppression, a project inspector, in consultation with a resource advisor, will be the on-the-ground BLM representative authorized to permit opening decommissioned roads or constructing roads within the monument.
- When feasible, existing roads or trails will be used as a starting point for burn-out or backfire operations designed to stop fire spread. Backfires will be designed to minimize fire effects on habitat. Natural barriers will be used whenever possible and fires will be allowed to burn to them.
- In the construction of fire lines, minimum width and depth will be used to stop the spread of fire. The use of dozers would be minimized and resource advisors will give approval of the use of dozers.
- Dozer line will not be constructed within or along stream channels or dry draws. If dozer line construction is proposed within riparian areas, it would be perpendicular to stream channels or dry draws and the resource advisor would be consulted prior to line construction. Hand line may be used parallel to stream channels and dry draws; however, hand line should be constructed as far as possible from the main channel.
- Live fuels will be cut or limbed only to the extent needed to stop fire spread.
- The felling of snags and live trees will only occur when they pose a safety hazard or will cause a fire to spread across the fire line.
- The construction of helispots should be minimized and all helispots will be approved by the resource advisor. Past locations or natural openings should be used when possible. Helispots will not be constructed within riparian reserves or areas of special concern.
- Retardant or foam will not be dropped on surface waters, riparian reserves, or on occupied spotted owl or eagle nests.
- Resource advisors will determine rehabilitation needs and standards in order to reduce the impacts associated with fire suppression efforts.
- Properly designed and adequately spaced water bars would be constructed on all fire lines at the completion of fire suppression activities.

In addition to the guidelines described above, several areas have been identified where suppression methods will be limited to provide additional protection for these areas. Maps identifying these areas are made available to suppression forces before the start of each fire season. Areas of special concern which require specific fire suppression tactics or limit tactics within the Cascade Siskiyou National Monument are displayed in Table O-1.

Table O-1. Suppression Tactics for Designated Special Management Areas within the CSNM.

Designation	Fire Suppression Tactics
Owl Core Areas	× Protect nest tree and adjacent trees from felling or any type of damage. × Minimize fire damage to owl core area.
Archaeological Sites	× No use of dozer or hand-line construction through these sites
Scotch Creek and Oregon Gulch RNAs	× Confine use of vehicles to existing roads adjacent to the RNAs. × No use of dozers within the RNA boundaries.
Bean Cabin	× Minimize disturbance to this historic site.
Pacific Crest Trail	× Minimize impacts from suppression efforts to trail and the immediate area that is visible from the trail. × Allow fire to burn across trail and in surrounding area rather constructing dozer lines to suppress fire.
Mariposa Lily Botanical Area	× Confine use of vehicles to existing roads. × No use of tractors within the boundary of the preserve. × No hand-line construction through areas where Mariposa Lily populations are located.
Soda Mountain Wilderness	× Refer to the fire suppression guidelines following this table.

Fire suppression guidelines for the Soda Mountain Wilderness Study Area (WSA) are as follows:

- Protection agencies will notify the BLM immediately when a fire is reported in, or has the potential to enter the WSA.
- A BLM resource advisor shall be dispatched to all fires within the WSA. This individual will assist in identifying threatened resource, cultural, or social values within the WSA, and will act as a liaison between the protection agency and the BLM Medford District.
- Earth moving equipment shall not be used without prior approval of the Medford District Manager. This authority may not be delegated and there will be no exceptions.
- Fire lines will be located to take advantage of natural barriers such as rock outcrops, streams, and changes in vegetation.
- Unburned material may be left inside the fire line. All such material will be felt/tested with bare hands to ensure no sparks or glowing embers remain. Limbs, logs or other material turned parallel to the slope to prevent rolling will be placed or scattered to resemble natural conditions.
- Water barring of fire lines will be done to prevent accelerated erosion.
- Limbing of trees adjacent to fire lines will be done only if needed for fire suppression and/or fire fighter safety.
- Burning snags or trees will only be felled when they pose a definite threat to the containment of the fire or the safety of fire fighters.
- Logs within the proposed fire line location will be rolled out of their beds. If rolling is not possible fire lines shall be constructed around these logs where possible.
- Helispots should use natural openings where only minimal improvements are necessary, and should be constructed outside the WSA when possible.
- With the exception of removing obstructions, trails and waterways should not be improved. If improvement is necessary they should be restored to pre-fire conditions if possible.
- Fire engines and other non-earth moving equipment used in suppression efforts should use existing roads adjacent to the WSA. When this is not feasible, efforts shall be taken to minimize crossings of streams, springs or wet areas. Steep slopes should be avoided.
- Use of fire retardant may be used except on surface waters or in riparian reserves.

APPENDIX P

Existing Withdrawals, Linear and Site Authorizations in the CSNM

Table P-1. Existing Withdrawals in the CSNM

Authority	Acreage[1]	Purpose	Effect	Recommendation
PLO No. 3869	444.35	Recreation Site	B	Continue
Water Power Designation 3	5,631.54	Water Power	C	Revoke
Water Power Designation 13	127.27	Water Power	C	Revoke
Power Site Classification 218	1,482.21	Power Site	C	Revoke
Power Site Reserve 583	1,799.03	Power Site	C	Revoke
Power Site Reserve 584	160.00	Power Site	C	Revoke
Power Site Reserve 649	Unknown	Power Site	C	Revoke
Federal Power Commission, Order #2082	Unknown	Power Project	B	Continue
Public Land Order No. 5490, as modified by Public Land Order No. 7043	All PD Lands	Multiple Use Management	B	Revoke

[1] Acreage figures are for the entire area included in the Withdrawal. With some of the Withdrawals, there are acres outside the monument area.
B: Withdrawn from operations of the General Land and Mining Laws
C: Withdrawn from operation of the General Land Law.

Table P-2. Linear and Site Authorizations in the CSNM

OR\ORE #	Holder	Type or Use	Remarks
20137	Qwest	Communication Site	
34999	Oregon Highway Department	Communication Site	
36203	COBI[1]	Communication Site	with sub-lessee
38053	PP&L	Communication Site	
44980	ODF	Lookout and Communication Site	with sub-lessee
48563	AT&T Wireless	Communication Site	with sub-lessee
49604	US Cellular	Communication Site	
54336	SOU (JPR)[2]	Communication Site	with sub-lessees
17317	PP&L	Utility Line	
20544	PP&L	Transmission	Line 19 (115 kV)
24416	PP&L	Transmission	Line 59 (230 kV)
24876	Qwest	Utility Line	
34269	Qwest	Utility Line	
37585	R. Taylor	Ditch	
42014	US Sprint	Fiber Optic Line	
43005	S. Young	Water Line	
43975	AT&T	Fiber Optic Line	
45363	L. Tynes	Road	Private Access Road
46542	PP&L	Fiber Optic Line	
47421	MCI	Road	Soda Mountain Road
47454	PP&L	Utility Line	
48560	PP&L	Utility Line	
50516	C. & M. McLaughlin	Road	BLM Road #40-3E-3
54223	M. George\K. Freeman	Road	Soda Mountain Road
0497	Qwest	Utility Line	
03235	R. Taylor	Water Facility	
06936	Bureau of Reclamation	Canal & Laterals	Serves Talent Irrigation District
013754	Oregon Highway Department	Interstate Highway	I-5
R011947	Qwest	Utility Line	
R022462	Oregon Highway Department	State Highway	Old Highway 99
R023045	Oregon Highway Department	Interstate Highway	I-5
5439	Qwest	Utility Line	
13745	PacifiCorp	Transmission Line	500 kv line
14956	Qwest	Utility Line	
18550	SOPTV[3]	Communication Site	Chestnut Mountain
23467	State of Oregon	Communication Site	Chestnut Mountain
24498	M. McLaughlin	Water Line	
35917	Qwest	Utility Line	
36695	Qwest	Utility Line	
36784	State of Oregon	Airport Lease	Pinehurst Airstrip
37836	M. McLaughlin	Water Line	
41384	G. Willey	Road	
42492	Corral Creek Home Owner's Association	Road	

Table P-2. Linear and Site Authorizations in the CSNM

OR\ORE #	Holder	Type or Use	Remarks
44943	D. Rowlett	Agricultural Lease	
44944	D. Rowlett	Road	
45379	Bureau of Reclamation	Canal	
45385	D. Cleland	Road	
45495	Roskamp Services	Water Line	
45999	K. Stark	Road	
46052	C. Russell	Road	
46135	J. Walt	Road	
48248	D. Rowlett	Ditch	
49214	D. Ragnell	Road	
49413	E. Milsom	Road	
50516	M. McLaughlin	Road	
50673	Roskamp Services	Road	
50687	H. Cassells	Road	
53772	S. Tall Hunter	Road	
53615	L. Scheer	Water Line	
56788	E. Coker	Road	
56941	J. Impara	Road	
57141	C. Harrison	Road	
57804	L Davoli	Road	
03490	PacifiCorp	Utility Line	
05569	Qwest	Communication Site	Chestnut Mountain
05609	PacifiCorp	Utility Line	
57296	A.M. Fields	Event Permit	Sundance Group
06936	Bureau of Reclamation	Canal and Laterals	
012019	PacifiCorp	Utility Line	
013626	Pinehurst School	Recreation and Public Purposes Act Lease	Elementary School
013794	Oregon Highway Department	Maintenance Facility	Highway 66
R014637	Bureau of Reclamation	Hyatt Reservoir	

[1] California-Oregon Broadcasting, Inc.
[2] Southern Oregon University, Jefferson Public Radio
[3] Southern Oregon Public Television
AR @ Roseburg General Land Office (GLO) cases

Glossary of Terms

Access Agreements - (a) Generally construed to mean a Reciprocal Rights-of-Way agreement. It is an exchange of grants between the United States and a permittee, which provides for each party using the other's roads or constructing roads over the other's lands; (b) the rights granted to the United States through the purchase of a Rights-of-Way easement.

Adaptive Management - A systematic process to better achieve management objectives and practices by learning from the outcomes of operational programs. It's most effective form–"active" adaptive management–employs management programs that are designed to experimentally compare selected policies or practices, by evaluating alternative hypotheses about the system being managed.

Air Quality - A measure of the health-related and visual characteristics of the air often derived from quantitative measurements of the concentrations of specific injurious or contaminating substances.

Air Quality Class I and II Areas - Regions in attainment areas where maintenance of existing good air quality is of high priority. Class I areas are those that have the most stringent degree of protection from future degradation of air quality. Class II areas permit moderate deterioration of existing air quality.

Allocation - Process to specifically assign use between and rationing among competing users for a particular area of public land or related waters.

Allotment - An area allocated for livestock use by one or more qualified grazing lessees including prescribed numbers and kinds of livestock under one plan of management.

Allotment Management Plan (AMP) - A written program of livestock grazing management including supportive measures, if required. An AMP is designed to attain specific management goals in a grazing allotment and is prepared cooperatively with the lessee(s).

All-Terrain Vehicle (ATV) - All-terrain vehicle; 42" width or smaller. A small, amphibious motor vehicle with wheels or tractor treads for traveling over rough ground, snow, or ice, as well as on water.

Alternative - One of at least two proposed means of accomplishing planning objectives.

Animal Unit Month (AUM) - The amount of forage required to sustain the equivalent of 1 cow and a calf for 1 month.

Aquatic - Living or growing in or on the water.

Archaeological Site - A geographic locale that contains the material remains of prehistoric and/or historic human activity. (See also Historic Site)

Archaeology - The scientific study of the life and culture of past, especially ancient, peoples, as by excavation of ancient cities, relics, artifacts, etc.

Area of Critical Environmental Concern (ACEC) - An area of public lands where special management attention is required to protect and prevent irreparable damage to important historic, cultural, or scenic values, fish and wildlife resources, or other natural systems or processes, or to protect life and /or provide safety from natural hazards.

Assessment - A form of evaluation based on the standards of rangeland health, conducted by an interdisciplinary team at the appropriate landscape scale (pasture, allotment, sub-watershed, watershed, etc.) To determine conditions relative to standards.

Authorized Officer - Any person authorized by the Secretary to the Interior to administer regulations.

Awns - A more or less stiff bristle on the bracts or scales within a grass inflorescence, usually a prolongation of a nerve.

Best Management Practices (BMPs) - Methods and/or measures, selected on the basis of site specific conditions, to ensure that water quality will be maintained at its highest practicable level. BMPs are not limited to structural and nonstructural controls, and procedures for operations and maintenance. BMPs can be applied before and after pollution-producing activities to reduce or eliminate the introduction of pollutants into receiving waters. (40 CFR 130.2, EPA Water Quality Standards Regulations)

Biodiversity - The variety of life and its processes, and the interrelationships within and among various levels of ecological organization. Conservation, protection, and restoration of biological species and genetic diversity are needed to sustain the health of existing biological systems. Federal resource management agencies must examine the implications of management actions and development decisions on regional and local biodiversity.

Casual Use - Activities ordinarily resulting in negligible disturbance of federal lands and resources.

Connectivity - A measure of the extent to which conditions among late-successional and old-growth forest areas provide habitat for breeding, feeding, dispersal, and movement of wildlife and fish species associated within late successional and old-growth forests.

Consultation - Formal consultation is a process that occurs between the U.S. Fish and Wildlife Service (USFWS) or the National Marine Fisheries Service (NMFS) and a federal agency that commences with the federal agency's written request for consultation under Section 7(a)(2) of the Endangered Species Act regarding a federal action which may affect a listed species or its critical habitat. It concludes with the issuance of the biological opinion under Section 7(b)(3) of the Act. Informal consultation is an optional process that includes all discussions, correspondence, etc., between the USFWS or NMFS and the federal agency, or the designated non-federal representative, prior to formal consultation, if required. If the listing agency determines that there is no likely adverse affect to the listed species, it may concur with the action agency that formal consultation is unnecessary.

Cubic feet-per-second (cfs) - As a rate of stream flow, a cubic foot of water passing a referenced section in 1 second of time.

Cultural Resources - Those resources of historical and archaeological significance.

Cumulative Effects - Those effects on the environment that result from the incremental effect of the action when added to past, present, and reasonably foreseeable future actions regardless of what agency or person(s) undertakes such other actions. Cumulative effects can result from individually minor but collectively significant actions taking place over a period of time.

Decommission - To remove those elements of a road that reroute hillslope drainage and present slope stability hazards. This usually involves removing the culverts, ripping the road prism, installing drainage facilities (i.e. waterbars, waterdips, etc.), and replanting the road surface with grasses, legumes, shrubs, and trees.

Degree of Function - A level of physical function relative to properly functioning condition commonly expressed as properly functioning, functioning-at-risk, or non-functional.

Designated Road - A linear transportation facility on which state licensed, four- wheeled vehicles can travel. By definition, these do not qualify as trails.

Designated Sites/Areas - Sites and areas that receive regular maintenance, and are primarily used by the public for recreation purposes.

Developed Recreation Site - A site developed with permanent facilities designated to accommodate recreation. Such sites or areas may include such features as: delineated spaces for parking, camping, or boat launching, sanitary facilities, potable water, grills or fire rings, tables, or controlled access.

Dispersal - The movement of an individual from their origin to a new site.

Dispersal Habitat - Habitat that supports the life needs of an individual animal during dispersal. Generally satisfies needs for foraging, roosting, and protection from predators.

Dispersed Recreation - A general term referring to recreation use outside of developed sites. This includes but is not limited to activities such as scenic driving, hiking, bicycling, hunting, fishing, horseback riding, cross-country skiing, snowmobiling in a primitive to semi-primitive environment.

Diversity - The aggregate of species assemblages (communities), individual species, the genetic variation within species, and the processes by which these components interact within and among themselves. The elements of diversity are -1) community diversity (habitat, ecosystem), 2) species diversity, and 3) genetic diversity within a species; all three of which change over time.

Easement - A right or privilege one may have on another's land.

Ecosystem - A system made up of a community of animals, plants, and micro-organisms and its interrelated physical and chemical environment.

Endangered Species - Any animal or plant species in danger of extinction throughout all of a significant portion of its range. These species are listed by the U. S. Fish and Wildlife Service.

Endemic - A species that is unique to a specific locality.

Ephemeral Stream - A stream that flows only in direct response to precipitation, and whose channel is at all times above the water table.

Equestrian - Of horses, horsemen, or horseback riding.

Exclusive Easement - An exclusive easement grants control of the right-of-way to the Untied States and may allow it to authorize third-party use (i.e. public) and set rules of its use. (See also Non-Exclusive Easement)

Facility - Refers to administrative or recreational areas/structures installed and operated by the Bureau of Land Management. Areas include campgrounds, trailheads, pullouts, picnic areas, and parking areas. Structures include buildings, shelters, hiking trails, kiosks, signs, toilets, picnic tables, fire rings, water hydrants, and fences.

Fauna - The animals of a specified region or time.

Floodplain - A plain along a stream or river onto which the flow spreads at flood stage.

Flora - The plants of a specified region or time.

Forage - Vegetation of all forms available and of a type used for animal consumption.

Four-wheel-drive (4wd) - Four-wheel-drive, differential transfer case disperses 50/50 front and rear displacement. Trucks, cars, buses, or sport utility vehicles with high clearance and the ability to operate off-pavement as well as on highways.

Functioning-at-risk - Riparian-wetland areas that are in functional condition but an existing soil, water, or vegetation attribute makes them susceptible to degradation.

Grazing System - A prescribed method of grazing a range allotment having two or more pastures or management units to provide periodic rest for each unit.

Ground Water -Water in the ground that is in the zone of saturation; water in the ground that exists at, or below the water table.

Guideline -Practices, methods, techniques and considerations used to ensure that progress is made in a way and at a rate that achieves the standard(s).

Habitat - A specific set of physical conditions in a geographic area(s) that surrounds a single species, a group of species, or a large community. In wildlife management, the major components of habitat are food, water, cover, and living space.

Habitat Fragmentation - The breakup of extensive habitat into small, isolated patches which are too limited to maintain their species stocks into the indefinite future.
(See also Connectivity)

Habitat Types -The BLM modified the McKelvie system by dividing two of his habitat types for a total of six types instead of four. A definition of each category can be found in Chapter 2, in the OGEA section.

Historic Site - A cultural resource site resulting from activities or events dating to the historic period (generally post 1830 in western Oregon).

Home Range - The area which an animal traverses in the scope of normal activities, not to be confused with territory which is the area animal defends.

Hydrologic Cycle - The process in which water enters the atmosphere through evaporation, transpiration, or sublimation from the oceans, other surface water bodies, or from the land and vegetation, and through condensation and precipitation returns to the earth's surface. The precipitation then occurs as overland flow, stream flow, or percolating underground flow to the oceans or other surface water bodies, or to other sites of evapo-transpiration and recirculation.

Hydrology - The science dealing with the properties, distribution, and circulation of water.

Impact - Synonymous with effects. Includes ecological, aesthetic, historic, cultural, economic, social, or health, whether direct, indirect, or cumulative. Impacts may also include those resulting from actions which may have both beneficial and detrimental (adverse) effects. Impacts may be considered as direct, indirect, or cumulative

Indicators - Parameters of ecosystem function that are observed, assessed, measured, or monitored directly or indirectly to determine attainment of a standard(s).

Infiltration - The downward entry of water into the soil.

Infiltration Rate -The rate at which water enters the soil.

Interim Management Policy (IMP) - An interim measure governing lands under wilderness review. This policy protects Wilderness Study Areas from impairment of their suitability as wilderness.

Intermittent Stream - Seasonal stream; a stream that flows only at certain times of the year when it receives water from springs or from some surface source, such as melting snow in mountainous areas.

Invertebrate Species -Any animal without a backbone or spinal column.

Key Watershed - As defined by National Forest and Bureau of Land Management District fish biologists, a watershed containing 1) habitat for potentially threatened species of stocks of anadromous salmonids or other potentially threatened fish; or 2) greater than six square miles with high quality water and fish habitat.

Late-Successional Forest - Forest seral stages which include mature and old-growth age class.

Lease - An authorization or contract by which one party (lessor) conveys the use of property, such as real estate, to another (lessee) in return for rental payments.

Lessee - (Livestock Operator) A person or organization legally permitted to graze a specific number and class of livestock on designated areas of public land during specified seasons each year.

Leasable Minerals - A mineral such as coal, oil shale, oil and gas, phosphate, potash, sodium, geothermal resources, and all other minerals that may be developed under the Mineral Leasing Act of 1920, as amended.

Leave-No-Trace - A land use ethic which involves many aspects to help eliminate or reduce impacts. It starts with proper planning to avoid high use periods, to repack food to avoid unnecessary packaging and waste. It includes traveling on existing trails and using existing campsites if available and if not camp in an area that is durable. Leave-no-trace promotes the proper methods to dispose of wastes, and use of stoves and candle lanterns for cooking and light rather than campfires. If a campfire is used, do not create new ones but use existing fire rings. Keep fires small and scatter the ashes when breaking camp. Camp at least 200 feet from streams and lakes, respect wildlife and other visitors by staying as inconspicuous as possible.

Mechanized Vehicle Use - Includes the use of any vehicle, device, or contrivance for moving people or material in or over land, water, snow, or air that has moving parts. This includes, but is not limited to, sailboats, sailboards, hang gliders, parachutes, bicycles, game carriers, carts, and wagons. The term does not include wheelchairs, nor does it include horses or other pack stock, skis, snowshoes, non-motorized river craft including, but not limited to, drift boats, rafts, canoes, sleds, travois, or similar devices without moving parts.

Mineral Entry - The location of mining claims by an individual to protect his/her right to a valuable mineral.

Mineral Materials - Refer to saleable minerals.

Mineral Withdrawal - A withdrawal of public lands which are potentially valuable for leasable minerals. This precludes the disposal of the lands except with a mineral reservation, unless the lands are found to not be valuable for minerals.

Mitigating Measures - Constraints, requirements, or conditions imposed to reduce the significance of or eliminate an anticipated impact to environmental, socioeconomic, or other resource value from a proposed land use. Committed mitigating measures are those measures BLM is committed to enforce (i.e., all applicable laws and their implementing regulations).

Monitoring - A process of collecting information to evaluate if objective and anticipated or assumed results of a management activity or plan are being realized or if implementation is proceeding as planned.

Montmorillonite Clay - Soils with aluminum/ silicate clays with an expanding crystal lattice. Montmorillonitic clays have a high shrink/swell ratio which results in large cracks in the soil when it is dry and swelling upon wetting. These soils are, generally, very sticky and slippery when wet.

Mountain Bicycle - Bicycle designed for off-pavement use. Generally are multi-geared with fat knobby tires. Frames and tire rims are stronger than road bicycles. Sometimes referred to in this document as a non-motorized vehicle.

Multiple Use - Management of public lands and their resource values so that they are utilized in a combination that will best meet the present and future needs of the American people.

Non-exclusive Easement - A non-exclusive easement to the United States only allows use by it and its agents and those authorized to do business on the United States lands.

Non-Functioning - Riparian-wetland areas that clearly are not providing adequate vegetation, landform, or large woody debris to dissipate stream energy associated with high flows.

Noxious Plants - Those plants which are injurious to public health, agriculture, recreation, wildlife, or any public or private property.

Noxious Weeds - (see Noxious Plants)

Nutrient Cycling -The movement of essential elements and inorganic compounds between the reservoir pool (soil, for example) and the cycling pool (organisms) in the rapid exchange (i.e., moving back and forth) between organisms and their immediate environment.

O&C Lands - Public lands granted to the Oregon and California Railroad Company for the construction of track from California to Oregon and subsequently revested to the United States.

Off-Highway Vehicles (OHV) - Any motorized vehicle designed for or capable of cross-country travel over land, water, sand, snow, ice, marsh, swamp-land, or other terrain.

Off-Road Vehicle - Means any motorized vehicle capable of, or designed for, travel on or immediately over land, water, or other natural terrain, excluding: (1) Any nonamphibious registered motorboat; (2) any military, fire, emergency, or law enforcement vehicle while being used for emergency purposes; (3) any vehicle whose use is expressly authorized by the authorized officer, or otherwise officially approved; (4) vehicles in official use; and (5) any combat or combat support vehicle when used in times of national defense emergencies.

Old-Growth Forest - A conifer forest stand usually at least 180-220 years old with moderate to high canopy closure; a multi-layered, multi-species canopy dominated by large overstory trees; high incidence of large trees, some with broken tops and other indications of old and decaying wood (decadence); numerous large snags; and heavy accumulations of wood, including large logs on the ground.

Organic Matter - Plant and animal residues accumulated or deposited at the soil surface; the organic fraction of the soil that includes plant and animal residues at various stages of decomposition; cells and tissues of soil organisms, and the substances synthesized by the soil population.

Perennial Stream - A stream that flows continuously. Perennial streams are generally associated with a water table in the localities through which they flow.

Permit - A short-term, revocable authorization to use public lands for specific purposes.

Permittee (reciprocal agreements) - (a) The cooperating party to a reciprocal agreement (some early agreements refer to such a party as “applicant”); (b) A third party using a road controlled by the United States and constructed over lands belonging to the permittee in a reciprocal agreement; and (c) A party authorized to use roads controlled by the United States under the terms of a Unilateral O&C Rights-of-Way, mining, or grazing permit, etc.

Permeability - The ease with which gases, liquids or plant roots penetrate or pass through bulk mass of soil or a layer of soil.

Physiographic Region - Region of similar geologic structure and climate with a unified history of land formation.

Planning Area - All of the lands within the BLM management boundary addressed in a BLM resource management plan, however planning decisions apply only to BLM-administered lands and mineral estate.

Plant Community - An association of plants of various species found growing together in different areas with similar site characteristics.

Prescribed Fire - Controlled application of fire to natural fuels under conditions of weather, fuel moisture, and soil moisture that will allow confinement of the fire to a predetermined area and at the same time, will produce the intensity of heat and rate of spread required to accomplish certain planned benefits to one or more objectives for wildlife, livestock, and watershed values. The overall objectives are to employ fire scientifically to realize maximum net benefits at minimum environmental damage and acceptable cost.

Prey Species - An animal taken by a predator as food.

Properly Functioning Condition (PFC) - Riparian-wetland areas are functioning properly when adequate vegetation, landform, or large woody debris is present to dissipate stream energy associated with high water flows, thereby reducing erosion and improving water quality. Properly functioning condition also acts to filter sediment, capture bedload, and aid floodplain development; improve flood-water retention and ground-water recharge; develop root masses that stabilize streambanks against cutting action; develop diverse pond and channel characteristics to provide the habitat and water depth, duration, and temperature necessary for fish production, waterfowl breeding, and other uses; and supports greater biodiversity.

Public Lands - Any land and interest in land owned by the United States within the several states and administered by the Secretary of the Interior through the Bureau of Land Management, without regard to how the United States acquired ownership, except lands located on the Outer Continental Shelf; and lands held for the benefit of Indians, Aleuts, and Eskimos.

Rangeland Improvements - Any activity or program on or relating to rangelands that is designed to improve forage production, change vegetation composition, control patterns of use, provide water, stabilize soil and water conditions, and enhance habitat for livestock, wildlife, and wild horses and burros. Rangeland improvements include land treatments (e.g., chaining, seeding, burning, etc.), stockwater developments, fences, and trails.

Reasonable Access - Owners of non-federal land surrounded by public land managed under FLPMA are entitled to reasonable access to their land. Reasonable access is defined as access that the Secretary of the Interior deems adequate to secure the owner reasonable use and enjoyment of the non-federal land. Such access is subject to rules and regulations governing the administration of public land.

Reference Area - Sites that, because of their condition and degree of function, represent the ecological potential or capability of similar sites in an area or region (ecological province); and serve as a benchmark in determining the ecological potential of sites with similar soil, climatic, and landscape characteristics.

Relict Plant Community - Areas of plants that have persisted despite the pronounced warming and drying of the interior west over the last few thousand years and/or have not been influenced by settlement and post-settlement activities.

Resource Management Plan (RMP) - A land use plan prepared by the BLM under current regulations in accordance with the Federal Land Policy and Management Act (FPLMA).

Research Natural Area (RNA) - An area set aside by a public or private agency specifically to preserve a representative sample of an ecological community, primarily for scientific and educational purposes. RNAs are areas designated to ensure representative samples of as many of the major naturally occurring plant communities as possible are preserved. The public may be excluded or restricted from such areas to protect studies.

Right-Of-Way (ROW) - Federal land authorized to be used or occupied for the construction, operation, maintenance, and termination of a project, pursuant to a ROW authorization.

Riparian Area - An area surrounding, influencing, and influenced by a water body such as a stream or wetland. Typically, riparian areas include a community of plants, animals, and insects that are only present due to the moist environment (e.g. groundwater, humidity) created by the water body. Typically, riparian areas also include the adjacent forest, shrublands, grasslands, soils, etc. that provide nutrients, wood, and sediment to a water body.

Riparian Habitat – The living space for plants, animals, and insects provided by the unique character of a riparian area.

Riparian Reserve – A federally designated buffer around streams, springs, ponds, lakes, reservoirs, fens, wetlands, and areas prone to slumping, on federal lands only. The Northwest Forest Plan's Aquatic Conservation Strategy defines riparian reserve widths for the above water bodies. For example, minimum widths are 150 ft. around a wetland, or 150 ft. on each side of a fishless stream.

Riparian Vegetation - Plants adapted to moist growing conditions along streams, waterways, ponds, etc.

Route - A path, way, trail, road, or other established travel corridor.

Saleable Minerals - Minerals that may be sold under the Material Sale Act of 1947, as amended. Included are common varieties of sand, stone, gravel, and clay.

Scarification - Removal of targeted woody vegetation using heavy machinery such as a tractor or dozer. Rear mounted rippers are used to uproot vegetation which is piled using a front mounted blade. Disturbed areas are generally seeded with non-native perennial grasses and the piles burned during the wet season.

Season-Of-Use - The timing of livestock grazing on a rangeland area.

Sediment Yield - The quantity of soil, rock particles, organic matter, or other dissolved or suspended debris which is transported through a cross-section of stream in a given period. Measured in dry weight or by volume.

Silvicultural System - A planned sequence of treatments or prescriptions over the entire life of a forest stand needed to meet management objectives.

Species - Any species or subspecies of fish or wildlife or plants (and in the case of plants, any varieties), and any distinct population segment of any species of vertebrate fish or wildlife which interbreeds when mature.

Special Forest Products - Monument resources such as rocks and minerals, petrified wood, fossils, archaeological and cultural items, plants and parts of plants, Christmas trees, fish and animals not regulated by ODFW, insects or other invertebrate animals, bones, waste, and other products from animals.

Special Status Species - includes the following:

Proposed Species - species that have been officially proposed for listing as threatened or endangered by the Secretary of the Interior. A proposed rule has been published in the Federal Register.

Listed Species - species officially listed as threatened or endangered by the Secretary of the Interior under the provisions of the ESA. A final rule for the listing has been published in the Federal Register.

Endangered Species - any species which is in danger of extinction throughout all or significant portion of its range.

Threatened Species - any species which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.

Candidate Species - species designated as candidates for listing as threatened or endangered by the FWS and/or NMFS. A list has been published in the Federal Register.

State Listed Species - species listed by a state in a category implying but not limited to potential endangerment or extinction. Listing is either by legislation or regulation.

Sensitive Species - those designated by a State Director, usually in cooperation with the state agency responsible for managing the species and State Natural heritage programs, as sensitive. They are those species that: (1) could become endangered in or extirpated from a state, or within a significant portion of its distribution; (2) are under status review by the FWS and/or NMFS; (3) are undergoing significant current or predicted downward trends in habitat capability that would reduce a species' existing distribution; (4) are undergoing significant current or predicted downward trends in population or density such that federal listed, proposed, candidate, or State Listed status may become necessary; (5) typically have small and widely dispersed populations; (6) inhabit ecological refugia or other specialized or unique habitats; or (7) are State Listed but which may be better conserved through application of BLM sensitive species status.

Stabilization - A process to reduce risk of erosion and landslides by constructing drainage structures such as dips and water bars. This also includes seeding, planting other vegetation, or mulching on slopes. Unstable fill embankments that exceed the required road/trail width may be partially or fully removed.

Subwatershed - The sixth level in the hydrologic unit hierarchy. A subwatershed is a subdivision within a fifth level watershed.

Succession - A series of dynamic changes by which one group of organisms succeeds another through stages leading to potential natural community or climax.

Topography - The configuration of a surface area including its relief, or relative elevations, and position of its natural and manmade features.

Total Dissolved Solids (TDS) - The total quantity (reported in milligrams per liter) of dissolved materials in water.

Total Maximum Daily Loads (TMDLs) - Pollution load limits calculated by DEQ for each pollutant entering a water body. TMDLs describe the amount of each pollutant a waterway can receive and still not violate water quality standards. Both point and non-point source pollution are accounted for in TMDLs as well as a safety margin for uncertainty and growth that allows for future discharges to a water body without exceeding water quality standards.

Trail - A created or evolved transportation facility administratively designated for certain non-mechanized types of use. Examples of use on the trails in the monument include hiking, running, equestrian riding, and snowmobiling and cross country skiing.

Trailhead - A designated point of access to a recreation route or trail. It may include a parking area, kiosk, or toilet and can be reached by vehicular or pedestrian access.

Transient Snow Zone (TSZ) - The area where a mixture of snow and rain occurs is referred to as either the rain-on-snow zone or transient snow zone. The snow level in this zone fluctuates throughout the winter in response to alternating warm and cold fronts. Rain-on-snow events originate in the transient snow zone.

Understory - That portion of trees or other woody vegetation which form the lower layer in a forest stand which consists of more than one distinct layer (canopy).

Uplands - Lands that exist above the riparian/wetland area, or active flood plains of rivers and streams; those lands not influenced by the water table or by free or unbound water; commonly represented by the toe slopes, alluvial fans, side slopes, shoulders and ridges of mountain and hills.

Utility - A service provided by a public utility, such as electricity, telephone, or water.

Valid Existing Rights (VER) - Those rights in existence within the boundaries of the Cascade-Siskiyou National Monument before the monument was established on June 9, 2000. Valid existing rights were established by various laws, leases, and filings made with the BLM.

Vehicle - Any motorized transportation conveyance designed and licensed for use on roadways, such as an automobile, bus, or truck, and any motorized conveyance originally equipped with safety belts.

Vertebrate Species - Any animal with a backbone or spinal column.

Visitor Day - Twelve visitor hours which may be aggregated by one or more persons in single or multiple visits.

Watershed - All land and water within the confines of a drainage divide.

Watershed Analysis - A systematic procedure for characterizing watershed and ecological processes to meet specific management and social objectives. Watershed analysis provides a basis for ecosystem management planning.

Watershed Function - The principle functions of a watershed include the capture of moisture contributed by precipitation; the storage of moisture within the soil profile, and the release of moisture through subsurface flow, deep percolation to groundwater, evaporation from the soil, and transpiration by live vegetation.

Wetlands - Lands including swamps, marshes, bogs, and similar areas, such as wet meadows, river overflows, mud flats, and natural ponds.

Wilderness Area - Areas designated by congressional action under the 1964 Wilderness Act. Wilderness is defined as undeveloped federal land retaining its primeval character and influence without permanent improvements or human habitation. Wilderness areas are protected and managed to preserve their natural conditions, which generally appear to have been affected primarily by the forces of nature with the imprint on human activity substantially unnoticeable; have outstanding opportunities for solitude or for a primitive and confined type of recreation; include at least 5,000 acres or are of sufficient size to make practical their preservation, enjoyment, and use in an unimpaired condition; and may contain features of scientific, education, scenic, or historical value as well as ecological and geological interest.

Wilderness Study Area (WSA) - Areas under study for possible inclusion as a Wilderness Area in the National Wilderness Preservation System.

Windthrow - A tree or trees uprooted or felled by the wind.

Withdrawal - Removal or "withholding" of public lands from operation of some or all of the public land laws (settlement, sale, mining, and/or mineral leasing). An action which restricts the use or disposal of public lands, segregating the land from the operation of some or all of the public land and/or mineral laws and holding it for a specific public purpose. Withdrawals may also be used to transfer jurisdiction of management to other federal agencies.

Yarding - The act or process of conveying logs to a landing.

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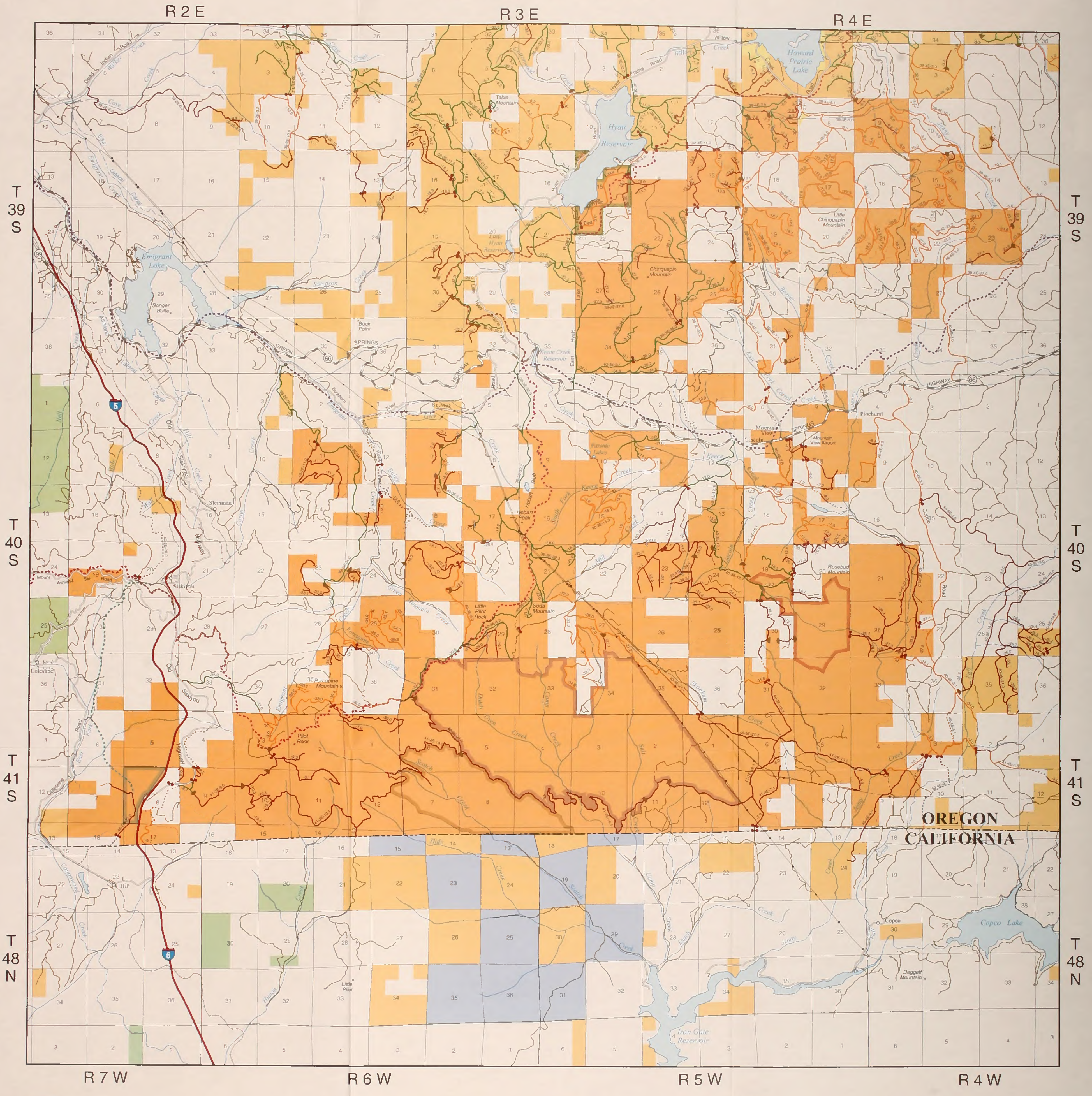

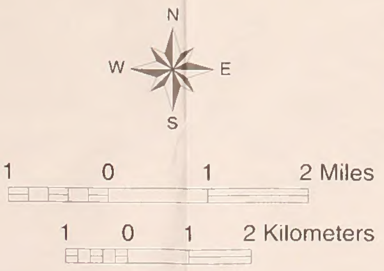

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Final Environmental Impact Statement
2005

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BLM Administered Land
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Other Administered Land
- 🟩 U.S. Forest Service
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- 🟦 State
- ☐ Private

- ▭ Hyatt Lake Recreation Area
- ▭ Mariposa Botanical Area
- ▭ Oregon Gulch Research Natural Area
- ▭ Scotch Creek Research Natural Area
- ▭ Wilderness Study Area

- ┅ Pacific Crest Trail
- ┅ Applegate Trail (Historic)
- ┅ Oregon-California Wagon Trail / Ewing Young Route (historic)

- Powerline
- Railroad
- × Rock Quarry

- Interstate Highway
- State Highway
- State or County Road

Closure Status
- ┄ Private or Unknown
- Open
- Closed
- BLM & Authorized Use
- Noninventoried Road

Closure Device
- Earth Berm
- Guard Rail
- Gate

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PLATE 1

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